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THE NATIONAL ASSOCIATION

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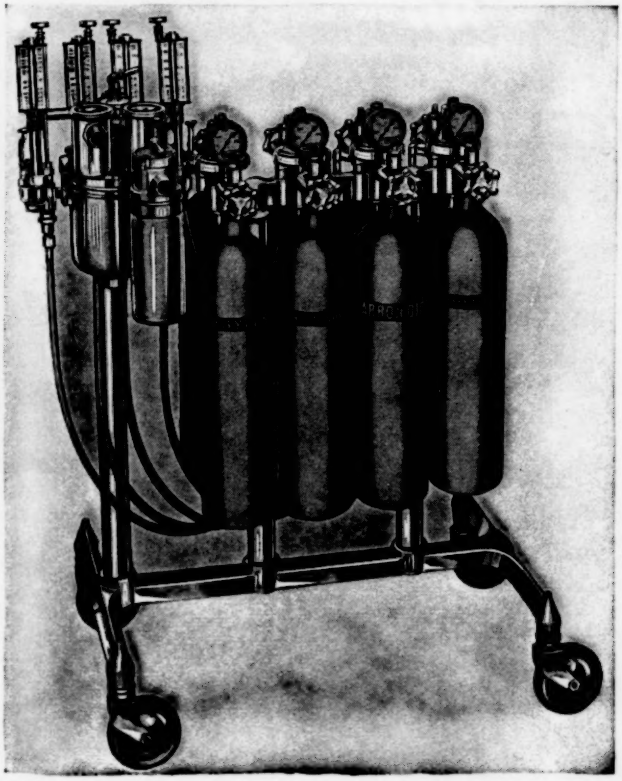

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THE BULLETIN
# of the
NATIONAL ASSOCIATION OF NURSE ANESTHETISTS

Volume 4 **No. 1**

January, 1936

NEW YEAR'S GREETING

The officers and Board of Trustees of the National Association of Nurse Anesthetists wish to extend to all members of the organization their best wishes for a year of progress and accomplishment, and of happiness gained as a by-product of worthwhile endeavor.

The fourth annual meeting of the National Association of Nurse Anesthetists will be held in Cleveland, Ohio, in conjunction with the American Hospital Association, which meets September 28th to October 2nd, 1936.

REPORT OF THIRD ANNUAL MEETING
OF THE
NATIONAL ASSOCIATION OF NURSE ANESTHETISTS

HELD IN ST. LOUIS, MO.

OCTOBER 1st, 2nd and 3rd, 1935

IN CONJUNCTION WITH THE AMERICAN HOSPITAL ASSOCIATION

In the interest of economy it has been necessary to condense reports, and reorganize certain material included. Every effort has been made to preserve the spirit of the convention and to present material which may have a future historical and reference value.

* * *

GREETING

ROBERT JOLLY, F.A.C.H.A.

President, American Hospital Association, Memorial Hospital, Houston, Texas

Madam Chairman, I am grateful for the privilege of being here this afternoon and appreciate more than I can tell your invitation. I have two meetings waiting for me now so I will not be able to make a speech, for which I know you are thankful.

I want to compliment you on your program folder. When it came to my desk in Houston I told Miss Elder, my secretary, that it was one of the keenest booklets I had ever seen. It is Scotch, too. It saved every bit of space that could be utilized. I congratulate you on your growth, which has been nothing short of phenomenal.

I was very much amused at the advice Dr. Caldwell gave you as to how you should do after you have a thousand or two dollars in the treasury. He did not know you had already exceeded that amount. You women work so much faster than we men that we do not always understand how far along you are.

I enjoyed your program very much last year and am sorry I cannot hear some of it this year, but you will understand I have to be running about considerably.

I see Miss Grace Warren from our hospital at Houston back there in the audience and I will let her represent me at the meetings.

On behalf of the American Hospital Association and our Trustees I want to tell you if there is anything we can do to help you we shall be glad to do so. I want to invite you to our sessions, for we need you.

Thank you again for your kind invitation.

PENTOBARBITAL IN LABOR

M. B. LAVEN, M.D.
St. Ann's Maternity Hospital, Cleveland, Ohio

It is our object to discuss with you our experience with pentobarbital (nembutal) in labor.

We have used this drug since July 1932 to obtain amnesia for approximately 2500 to 3000 patients. During these three years this drug alone has been given during the first stage and the first part of the second stage, adding as a rule drop ether late in the second stage and throughout delivery, with nitrous oxide being used occasionally instead of ether for delivery. Let me emphasize that pentobarbital alone has been given; no scopolamine, chloral, morphine, et cetera. On this account I believe we are in a position to judge and interpret its effects more accurately. When as in some hospitals scopolamine, morphine, etc., are used with pentobarbital it certainly makes interpretation much more difficult. For example, if a baby is blue, how can one tell if it is the morphine, or the scopolamine, or the pentobarbital?

THE ROUTINE

Primipara

The patient on admission is prepared locally and given one or two soapsuds enemas until the lower bowel is emptied. When the cervix is about one and one half to two fingers dilated and the contractions are five to six minutes apart, an initial oral dose of 6 or 7½ grains of pentobarbital is administered. If the patient is complaining and is not this far in labor, she is given this dose anyway. The 6-grain dose is given to small and average sized patients, which is the rule, and the 7½-grain dose to the very large ones (only occasionally). If the patient is further along in labor, that is, three or four fingers dilated and having three or four-minute contractions, we are more likely to give the 7½-grain dose simply to obtain a more rapid and deeper effect. If the patient is complaining a great deal we do not hesitate to give her a light drop ether analgesia until the pentobarbital has taken effect (when she comes in three or four fingers dilated). This may take place for fifteen to twenty minutes. Pentobarbital in these doses begins to take effect in twenty to twenty-five minutes when given by mouth (that is, without the ether). Absorption may be hindered by food in the stomach, which frequently happens with obstetrical patients.

While all these doses are used orally, we do not hesitate to give this rectally in about 2 to 3 ounces of plain water as an instillation. This is indicated when, first, it is felt that the patient may have too much food in her stomach; second, when a repeat dose is necessary and we feel that the patient might not swallow the capsules but aspirate them, or when a patient may be hysterical and refuse to swallow, we can "fool" her by instilling this rectally. It is our impression that absorption takes place even more rapidly when given rectally, that is, in ten to fifteen minutes, without irritation or discomfort. We do not use the rectal administration except when indicated because we feel that the simplicity of the oral administration is a definite advantage.

The second dose is 3 grains which may be given in one, two, or three hours depending on the initial effect, and the subsequent doses are 3 grains, usually given in about three or four hours as indicated. The indication for a repeat dose usually depends on the lucidity of the patient. As with all forms of amnesia the patient may rise with her contractions and apparently complain about them, yet we do not repeat pentobarbital for this. It is only when we feel that the patient is "remembering" too well and is too "clear" mentally that it is given, especially when a fairly long interval of three hours or more has elapsed between doses. However, even with this indication as a basis, it is not uncommon for a patient when interrogated two or three days later to find that she had complete amnesia, although she may at some points in labor appear to answer questions apparently with some accuracy. It is a combination of both these factors that is important in the deciding subsequent medication.

Multipara

The initial dose is again at least 6 grains and frequently 7½ grains orally as with primipara. We try to give this when the patient is one and one-half fingers dilated and having seven to eight-minute contractions. We never hesitate to give this initial dose even though the patient is farther along, that is, two to three fingers and having harder contractions. We are never afraid of the patient dilating too rapidly because we feel quite sure that pentobarbital does not depress the baby. As you know, morphine is unsafe to use in multipara because it is definitely a respiratory depressant of the newborn. We can tell you that pentobarbital is absolutely safe—we never worry about its effect on the infant, no matter how short a time has elapsed between its administration to the mother and the birth of the baby. Rectal administration can be used with multipara since frequently they have food in their stomachs on admission. Also a few minutes of light drop ether may be added to give a faster amnesia to the patient, as with the primipara, until absorption takes place. Our aim is to wipe out memory as soon as the patient complains and keep it so.

I want to tell you our results, opinions, and arguments from various angles in order to show you why we are convinced that it is the best form of amnesia that we have ever used.

Let us discuss this from a rhetorical question view point.

First

What percentage of amnesia do we get and how does this compare with sodium amytal, the Gwathmey, and morphine scopolamine routine?

In a series of 500 closely analyzed cases they showed 90 per cent complete amnesia and 10 per cent partial satisfactory, with practically no failures. This represents multipara as well as primipara. We never had any figures with sodium amytal, morphine-scopolamine, or ether-oil, but everyone in this hospital agrees that this is by far the best form of amnesia. We have had plenty of experience with sodium amytal (using it in 9-grain initial doses) and the ether-oil mixtures, so that we are able to compare them on an empirical basis.

Second

Does pentobarbital affect the length of labor? We believe that if anything labor is shorter and progresses better. At any rate it does not slow it up. We feel that when the inhibitions of the higher centers are removed the rhythmicity of the uterus increases and consequently labor progresses better. Ether and morphine will definitely inhibit uterine contractions, but pentobarbital by removing fear and apprehension actually allows the uterus to contract more automatically. It is common experience that a frightened, nervous, high strung patient can inhibit her contractions. Pentobarbital removes this. Also it is rather uncommon today to see long forty and fifty-hour first stages in primipara, whereas with ether-oil mixtures it was extremely common.

Third

How does pentobarbital affect the blood pressure, respiratory rate, pulse rate, color and fetal heart rate? It is our experience that there is no appreciable change in any of these, even in the large doses that we use. It was not uncommon to find pulse rates of 150-160 with ether-oil, but we seldom see these rapid pulses any more. It is important to know that after delivery, when a patient has had a large total dose during labor, her respirations may become depressed. In the last year we had only one patient in whom the respirations went down to eight or nine following a total dose of 22½ grains. With carbon dioxide and intravenous saline her color and respiratory rate improved without any difficulty. We have not had any patients to whom this happened while in labor.

At this point we might add that the factor of safety between the maximum dose and the lethal dose of pentobarbital is larger than any of the other barbiturates. Also picrotoxin, 3 milligrams, has been used experimentally as the most efficient antidote for barbiturate poisoning. Next in efficiency is coramine, then caffein sodium benzoate, and adrenalin. We have all these on hand.

Early in our experience we took blood pressure readings before and after for a considerable number of patients but found no appreciable clinical changes. The fetal heart rates also show no variations, and not even the slightest change in color of the mother takes place.

Fourth

What is the relationship between ether analgesia and anesthesia and pentobarbital amnesia?

Before the days of barbiturates it was not uncommon to give two, three, and four hours of drop ether analgesia, during the later part of the first stage and the entire second stage. With pentobarbital, drop ether analgesia is used practically only during the last part of the second stage and this is much lighter and slower than it used to be.

During delivery where ether is used, the anesthesia is very much lighter and is not a surgical anesthesia. Such side effects of nausea and vomiting are much fewer. The emesis basin is a thing of the past! Most patients require some ether for delivery, but not infrequently some deliver without it. This is definitely time saving to the trained anesthetist, as well as being extremely economical to the hospital. It has been a long time since we have seen a pneumonia of any kind. The pulse rate does not change but stays 100 to 110. We feel the less ether the less change, and as for mucus we hardly ever see a patient with it. We have not used any atropine in months. Again, less ether, less mucus! Also there is no excitement stage, for either ether anesthesia or nitrous oxide.

Fifth

Do the patients require more nursing care during this type of amnesia? It is our opinion that they do not require any more care. We feel that every patient regardless of what they are getting should be watched constantly. Pentobarbital requires only this watching. There are no hypodermics needed, as with scopolamine. We feel that this increases technical nursing care. Likewise, with the Gwathmey technic, more technical ability was required to obtain results than with any other form of amnesia. Also it requires less care than sodium amytal because in our experience the patients only occasionally become very much excited, whereas when we were using sodium amytal it was quite a common occurrence (about three or four in one hundred).

Sixth

How does pentobarbital affect the spontaneous breathing of the child? It is our definite opinion that pentobarbital *does not* depress the infant regardless of how soon it is born after the mother is given the large initial dose, and the same regardless of the total dose. We have seen any number of babies born one to one and one-half hours after the 6 or 7½-grain dose and breathe spontaneously and have good color. Likewise even with large total doses in long labors, if the delivery is not abnormal we experience no difficulty in spontaneous breathing. When comparing these babies with morphinized or etherized babies there is a considerable difference in favor of pentobarbital.

Seven

Does pentobarbital increase the number of forceps deliveries and abnormal deliveries? We believe that in hospital practice where the tendency is to do prophylactic forceps deliveries, there is no increase in the number of forceps deliveries. If the physicians are of the type who are in the habit of letting the patients deliver spontaneously, they naturally will have to use more outlet forceps delivery. This however is no different than with any other amnesia. Also we feel that pentobarbital decreases the number of abnormal deliveries, simply because the first stage of labor can be allowed to progress without any interference and the doctor is not so apt to attempt too early delivery because of the patient's discomfort.

Eight

Does pentobarbital increase post-partum hemorrhage? During the last 900 cases we have not had a single post-partum hemorrhage. It is our opinion that the pentobarbital does not interfere with the contracting power of the uterus, post-partum.

Nine

Does it influence the maternal morbidity and mortality rate? We feel the convalescence is aided by the sleep that follows the delivery. This sleep may last six to twelve hours and sometimes eighteen. The patient requires fewer narcotics. She usually sleeps quietly, has no nausea, and she may be drowsy but will take her food very well. In 500 cases analyzed carefully, the morbidity and mortality rates did not change.

Ten

What are the toxic effects of pentobarbital?

One hears today of the toxic effects of the barbiturates. In the 2500 to 3000 cases in which we have used it, especially in these large doses, I think we might get some reports back. We do not see any drug rashes due to this, we have not seen any pentobarbital psychoses, we have not seen any toxic amblyopia, nor granulocytopenia.

Eleven

Does pentobarbital influence the infant mortality rate? This is one of the most important and striking features. When we were using the Gwathmey routine our full term infant mortality rate was 3.5 per cent compared with 2.2 per cent for the pentobarbital series. We feel that a decrease of 33 per cent in our infant mortality rate speaks for pentobarbital's superiority, remembering that nothing has changed in the handling of these patients but the type of amnesia.

Twelve

How do the patients feel about this? It is a very common occurrence for the patients to return and ask for the "little yellow capsules." They are the ones who are satisfied with the amnesia.

HYPOTHETICAL CONSIDERATIONS

At this point we would like to make an attempt to answer the most puzzling phenomena in the entire procedure, which may be divided into the answer of two questions. First, why can we use such relatively large doses for the woman in labor? And second, why do these large doses have no effect on the baby?

Curtis[1] in his new book states that the basal metabolic rate in the late months of pregnancy is 20 to 25 per cent plus. In addition to this, we are dealing with an individual who is definitely at work and most frequently hard work. For the sake of argument this increases the metabolic rate anywhere from 40 to 50 per cent. This total increase of metabolic rate could be increased then easily 50 per cent in the average patient. This statement is made because of the great contrast in the size of the dose of pentobarbital of 3, 4½ and 6 grains (the last used only by a few) as a premedication in surgery. This is also the total dose, and it is the experience of the surgeons that the depression is frequently too great and the stupor following the operative procedure is also too deep, even in these doses. It must be remembered that these surgical patients are at a basal level. This difference in basal metabolism rate probably accounts for the ability of the patient in labor to handle the much larger dose. This is a theoretical explanation of the difference in tolerance between the surgical patient and the woman in labor.

The basal rate increase simply indicates the rate of oxygen consumption and this probably accounts for the ability to utilize and destroy the pentobarbital by the patient in labor.

The second question is, why the newborn breathe spontaneously regardless of how soon they are born after the administration of a 7½-grain initial dose or regardless of the size of the total dose? It is very common for a multipara who is asleep from the pentobarbital to be delivered in one, two or three hours afterwards and have the infant breathe spontaneously. This is not only true of pentobarbital but other barbiturates, such as sodium amytal, pernocton, and so forth.

What explanation can be made to account for this, in the light of experience with drugs such as morphine—a drug which always depresses respiration in babies; a drug which has to be used with great caution because we know what it can do to the baby?

Fabre[2] believes that barbiturates do not pass through the placenta in animals. Boucek and Renton[3] believe that amytal passes through the placenta but passes quickly from the fetal circulation. At present these two studies leave the question of the placenta as a barrier to barbiturates in open dispute. Clinically we do know that morphine passes through the placenta and definitely depresses the respiratory center in the newborn.

However, the ability of the infant to handle the pentobarbital theoretically revolves itself about four factors and probably involves all four.

First, let us consider the intra-uterine metabolic rate of the fetus. No one has ever established what this is. But we do have a rough index of what this might be, and that is, the fetal heart rate. In the adult tachycardia is a symptom of hyperthyroidism and we utilize this clinically as a rough index of metabolic rate. This should also then apply to the intra-uterine infant. When its heart rate in labor is approximately 150-160 per minute, it simply means that the oxygen requirements for its metabolism necessitate its particular tachycardia. Further, nature has provided this rate for approximately a seven-pound infant, and it is a ratio of almost 2 to 1 with the mother's pulse rate of around 90 while in labor. The average mother's weight ratio is almost 20 to 1 and the pulse rate ratio 2 to 1. This would allow the infant, on a basis of its metabolic rate and weight difference compared to the mother's, a ratio of 40 to 1 approximately. On this basis alone, the infant can handle forty times as much pentobarbital for its weight as the mother.

Second, the liver in the newborn is three times as large in proportion to other organs, as the liver of the adult is to other organs. Thus, in view of the fact that the liver plays a great role in the detoxification of all drugs, the ratio of 3 to 1 also adds to the ability of the fetus to destroy the barbiturates.

Third, another factor that is significant is that the umbilical vein carries the blood directly to the liver, which does not happen in the adult. This could mean that detoxification takes place much sooner in the infant and before it reaches the brain.

Fourth, the difference in the make-up of the higher centers of the brain between infant and adult may also account for the absence of an effect on the newborn. The barbiturates act on the higher centers of the brain. We use them to wipe out memory. If we approach the fatal dose, there is a seepage over into the vital area of the lower brain and then one begins to get the definite depression of the respiratory center. However, clinically we do not approach this point, and simply make an attempt to wipe out memory. A difference between the newborn infant and the mother is that the mother has memory and the infant has none. Therefore, the dose that it actually gets to its brain may wipe out the higher center which memory is to occupy, but there is no clinical manifestation of this in the newborn.

Summarizing this, there are these four factors: (1) the high metabolic rate of the fetus, which can utilize a dose of 40 to 1; (2) the proportionately large size and ability of the liver to detoxify; (3) the direct circulation of the umbilical vein to the liver, (the dosage passing through the liver first for immediate detoxification); (4) the fact that the fetus has not developed the higher centers, such as memory.

CONCLUSIONS

(1) Pentobarbital sodium to be effective for ideal amnesia in obstetrics must be used in large enough initial doses and total doses.

(2) The degree of percentage of complete amnesia in labor for pentobarbital is the best that we have ever obtained. (about 90 per cent complete and 10 per cent partial.)

(3) The condition of the mother and fetus are not endangered by its use in the dosage we have given, and the infant mortality rate for these 500 consecutive cases is definitely the lowest we have had.

(4) Pentobarbital can be used by itself during labor to obtain amnesia. No morphine or other drugs are necessary.

(5) The simplicity of administration and effectiveness should aid in making it more widely used in obstetrics.

(6) Pentobarbital gives the best amnesia that we have ever had for multipara.

(7) The theoretical explanation of the mechanism of action of pentobarbital is advanced.

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* * *

FACTS OF VALUE IN ANESTHESIA FOUND IN OTHER FIELDS

LOUISE SCHWARTING

Madison General Hospital, Madison, Wis.

When I was asked to prepare a paper for this assemblage and to choose my subject, I did not know what title to give it, but I did know that I wanted to go adventuring with you. To the extent that the title is a misnomer—that is the reason.

As we sit regarding our patients in anesthesia many questions arise in our minds—sometimes burning questions—at other times only vague wonder not formulated as a question until we somewhere find the answer and thrill to it as something we have long wanted to know.

Every section of the associated fields of physiology, psychiatry, biochemistry and pharmacology are being actively developed, and the special journals published by those working in these fields yield much material that is valuable to us. Some of the results of research in pure science seem rather abstract and unrelated to our special interests until, by hoarding all we can and then correlating it with facts gleaned elsewhere, they gain important and fundamental significance for us. The ingenuity displayed by the researchers yields almost as much pleasure as profit.

Respect for man and his efforts rises as one reads. Their work is so well done that its results may be appreciated in large part by any interested reader in these related fields.

The object of anesthesia is to render the individual insensible to pain while the functions necessary to the maintenance of life continue to be carried on. Respiration and circulation, which are the most vital are, fortunately, also the most variously safeguarded. To learn how to interrupt the function of feeling by local or general anesthetics with the least possible damage to the organism as a whole is the object of all research in anesthesia. Heroic efforts are being made to classify according to their action, and develop methods for the administration of the various drugs long known as well as those recently developed.

It has been frequently assumed that the effect of an anesthetic was achieved by its action on the cell lipoids. That it is, instead, tied up with the proteins has been shown by Lapicque of France and recently by Richter of Cornell. In 1860 Binz, and Claude Bernard, the eminent French physiologist, in 1875, spoke of the action of anesthetic drugs as being a "reversible coagulation of the body colloids—some directly by the action of the drug itself; others indirectly by exclusion of anabolites or retention of catabolites." Wilder D. Bancroft, in supporting Bernard's theory of narcosis by the reports of his own experimental work, calls attention to the fact that the colloidal changes in the direction of coagulation or agglomeration and showing increased viscosity, produce anesthesia[1]. In several other articles we find this conception supported by clinical observations correlated with chemical and ultramicroscopic study of the blood colloids. By quantitative measurements of clotting, sedimentation, viscosity and refractivity of the blood these workers are able to determine whether catabolic or anabolic activity predominates, whether the patient is dehydrated or hydrated, with all that this implies. Since the continuance of life and the re-establishment of health is directly dependent upon these factors, their determination becomes of vast importance diagnostically as well as prognostically and in the selection and use of remedial measures. These studies seem to go directly to the heart of the problem and make rational, practices hitherto done empirically. Being based upon demonstrable and measurable evidence they either reinforce or correct clinical impressions. We quote, "Anesthetic drugs cause the protein particles of the blood to undergo first, dehydration, followed by their rapid hydration, thereby causing the precipitation of the hydrated particles in the cerebral neurones perivascular lymphatic channels. This renders the brain more or less bloodless and abolishes consciousness. If the hydration produces fatal shock, the brain will be found edematous, soft and difficult to remove. The toxic manifestations following administration of anesthetics do not differ from those met with in uremia, eclampsia, insulin intoxication, et cetera. A patient dying from the effects of an anesthetic dies of cerebral hydration, edema or shock as a result of the precipitated protein particles in every part of the brain, particularly in the region of the vagal nucleus[2]." Again we quote, "A patient is subjected to a surgical operation. This may be necessary in the presence of, or as the result of infection; at any rate lytic agents influence his condition. An anesthetic is administered;

more lysis is provoked. Following the operation isotonic salt solution, glucose and digitalis are administered, all being dehydrating agents. When the proteins of the blood and tissues no longer tolerate this succession of catabolism-provoking agents, there result post-operative fever, failing circulation and, not infrequently, intravascular coagulation. If this occurs in the lung it is apt to be called post-operative pneumonia; or, if extensive, it may produce massive collapse of the lung[3]." Most of the search for causes of post-operative pulmonary complications has been along other lines, with various results. Dr. Donald King, in charge of the Chest Clinic, Massachusetts General Hospital, in a detailed study of 7065 surgical cases, writes interestingly of his own and others' methods and findings and closes with a facetious paragraph, "If I were the patient" in which the unsatisfactoriness of the present state of knowledge is brought out[4]." Will this biochemical approach improve that situation?

From the other side of the world we find an article abstracted thus: "Anesthesia for sixty minutes causes a delayed sedimentation rate in rabbits followed by a period of accelerated sedimentation, reaching its maximum three hours later except in chloroform and avertin, in which the maximum is not reached for nine hours. Values return to normal in twelve to twenty-four hours[5]." The delayed sedimentation of the red blood cells reported in the Tokio Journal is characteristic of hydration or agglomeration of the proteins held by the adherents of the Bernard theory to exist in, and produce anesthesia and makes understandable the effect of carbon dioxide and oxygen in reviving patients in deep anesthesia, as carbon dioxide by increasing ventilation, eliminates the excess anesthetic, while oxygen relieves the co-existent anoxemia and to that extent corrects the hydration or aggregation which characterizes reduced hemoglobin. In the light of this reasoning, the practice of deetherization with carbon dioxide and oxygen or air appears to gain support on a chemical basis to reinforce the clinical impression of its value. The rapid sedimentation which occurs later in the recovery period is characteristic of dehydration and makes intelligible the giving of insulin with the glucose at that time, as advocated by the authors quoted. Glucose, being a dehydrator, and frequently used as such in various cerebral conditions, given alone only increases the chemical imbalance; given in conjunction with insulin, a hydrator, it becomes a valuable remedy, nourishing the body while it helps to restore to normal the colloidal state of the proteins. The studies just quoted seem to emphasize, in complete agreement with widely held clinical opinions, that in every case the time of anesthesia should be reduced to the minimum by high efficiency and complete cooperation of operating room personnel, and that anesthesia should never be unnecessarily deep, which means that it should be varied according to the needs of the different stages of the operation and the individual surgeon.

Noteworthy results are also being achieved in the classification of drugs, and acute and chronic diseases, from this biochemical viewpoint; particularly various psychoses and the drugs used in their treatment have been so studied. To illustrate: Catatonic dementia praecox according to Bancroft is associated with or, in part, produced by dehydration of the colloidal material of the central nervous system and is treated by sodium amytal, which is a hydrator. You will also recall that carbon dioxide inhalations produce a marked, though very transient improvement in this disease.

Research carried on for some years by J. S. Haldane and his associates and published in 1922 in a book entitled "Respiration," is credited with being in a large measure the foundation upon which oxygen therapy is built. This book is packed full of information both interesting and valuable to us. After many experiments the conclusion was reached that "practically speaking, the regulation of breathing during rest and under normal conditions is controlled by blood reaction." We should remember that anesthesia and illness both modify physiological reactions, nevertheless, all the understanding one can have of the normal helps to interpret the abnormal. Waters states that many, if not all of the derangements of physiologic processes usually recognized as resulting from anesthesia can be duplicated by the production of simple anoxemia[6]. It has been shown that the respiratory center responds to various acids, so one understands the increased breathing and lowered alveolar carbon dioxide pressure in starvation, diabetes, et cetera. Because anoxemia per se contributes to acidosis through the interruption of the process of glycogen catabolism, its avoidance gains special importance. The utilization of glycogen results in the formation of lactic acid as an intermediate product which, normally, is in part re-synthesized into glycogen, while the remainder is broken down into the end products—carbon dioxide and water. Both processes require oxygen. The import is clear." Optimum carbon dioxide concentration in the plasma is 65 volumes-per cent. Etherization of ninety minutes duration causes a drop of 15 per cent. At about 47 per cent acetone and diacetic acid appear in the urine." The author concludes, "Defer surgery until optimum metabolic equilibrium has been reached. Feed well with glucose and use insulin to keep the blood sugar slightly under normal. It is common knowledge that diabetics under insulin heal more rapidly than most normals[7]."

The response of breathing to abnormal resistance investigated by Davies, Haldane and Priestly[8] using themselves as subjects, was immediate slowing with increase in depth and a considerable increase (1 per cent) in alveolar carbon dioxide pressure. In closed circle anesthesia, bag resistance is employed for this purpose. With too great resistance, or its too long continuance, fatigue of the respiratory center and muscles is produced, indicated by increasing shallowness and frequency of breathing. It behooves us therefore to graduate the amount of resistance offered according to the muscularity of the individual and the increased fatigability of patients who have become neurasthenic from whatever cause. It is helpful to remember the author's definition of neurasthenia as a "more lasting and persistent form of ordinary fatigue." In shallow breathing only parts of the lung are expanded, with the result that the blood passing through the unexpanded portions does not become arterialized. Add to this the experimental evidence that the recumbent position interferes somewhat with the distribution of air in the lungs and the observation that the Trendelenburg position also makes ventilation more difficult. Taken together these facts constitute an adequate reason for maintaining an ample oxygen supply with free and deep respiration and to level the table as soon as the need for the head-down position is past. It would be interesting to know whether the head-down position, in itself, adds to the cerebral hydration and thereby to the cerebral anoxemia already present as a consequence of the action of the anesthetic agent.

The realization that such fear as many, especially unpremedicated patients suffer, often endures through life should make us most careful to endeavor to dispel it by adequate premedication and suggestion whenever possible. Also the knowledge that emotional excitement may increase the blood pressure as much as 100 points with an elevation of approximately half that amount in the diastolic, together with a considerable increase in the pulse rate, helps to interpret the phenomenon and should lead us to give as much oxygen to meet the increased metabolic need as is consistent with the accomplishment of the purpose in hand. An anoxic man or animal automatically continues into anesthesia the activity previously engaged in, ergo, great care should be exercised that the old, self-preservative instinct which guards the air supply is not roused into activity by producing a feeling of suffocation when induction of anesthesia is begun. This automatic continuance of behavior also points to the fallacy of unnecessarily restricting movements and so reflexly stimulating resistance in the semi-conscious patient.

Probably but few new facts have been presented in this paper. The object of reviewing and correlating them in this manner, in addition to their practical application, was to keep alive the desire to know for the sake of knowing, with the hope that it might become the mother of further invention or understanding, and keep us ever aware that what is known is only a small part of what in some future time will be known. Each answer to a problem brings with it several questions pressing for solution from the viewpoint of the frontier just achieved.

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ORGANIZATION AND MANAGEMENT OF A DEPARTMENT OF ANESTHESIA

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It should be the desire of every modern hospital to have an efficient and well organized department of anesthesia. Our thoughts, of course, are directed towards the institutions employing the nurse anesthetist and conducting schools of anesthesia for nurses.

The rapid advancement in anesthesia during recent years has greatly improved the methods of administration. With the variety of anesthetic agents introduced, and with the greater knowledge of their effects, has come the need for greater skill on the part of those to whom the responsibility of their administration is entrusted; hence the study of anesthesia is a specialty in itself. No hospital is complete without a service or department of anesthesia under expert supervision.

The advantages of having an organized department of anesthesia are certainly appreciated and wherever such exists the department becomes a matter of pride to the hospital. Once a department is organized and the surgeons have experienced the advantage of the services of the well trained anesthetist, it is not difficult to obtain the cooperation of the entire surgical staff in the further development of the department.

THE ANESTHESIA STAFF ORGANIZATION

The staff may consist of the Anesthetist-in-Chief, (a nurse), and one or more assistant anesthetists, also nurses. The students may be registered nurses, internes, or fourth-year medical students. The Anesthesia Department, owing to its relationship to surgery, functions directly under the Chief Surgeon and the associate members of his staff. The work of the nurse anesthetist should be limited to anesthesia, for in this way alone can the anesthetist fulfill her obligation of guardianship of the patient from the time he reaches the operating room floor until he is returned safely to bed in his room.

Anesthetist-in-Chief

The person who directs the department must be well trained in the methods of administration of various anesthetic drugs and thoroughly familiar with the requirements of the surgeons in her particular institution. She should have ability as a teacher and executive, and have a natural aptitude for study. Anesthesia is rapidly becoming more and more technical. Its importance is occupying more attention in the minds of the surgeon and the public, so that constant reading and study, refreshing and supplementing her knowledge, must occupy a great deal of her time. Where it is possible, and time permits, she should be sent to other clinics to observe and study.

The duties of the Anesthetist-in-Chief include the responsibility for her staff and equipment. She should personally train and supervise the members of her staff, and pass judgment on the ability of each member to handle each anesthetic procedure. She should be available for consultations on any problem or complication in anesthesia. She should be responsible for assigning each case to the different members of her staff.

She should be personally responsible for anesthetic records and the post-operative "follow-up" on each case.

Assistant Nurse Anesthetists

All members of the anesthesia staff should be selected with regard to their ability to work with students, dependability and willingness to cooperate with the head of the department and the other members of the staff. It is imperative that all members of the staff strive to correlate practical administration with theoretical instruction, and have a systematized technique perfected to meet the requirements of the individual surgeon. Weekly conferences should be held by the staff for the discussion of educational problems to make certain there is no variation in technique. The senior assistant should understand thoroughly the organization and management of the department so that she may be in readiness to take charge in the absence of the Chief Anesthetist.

Students—(Graduate registered nurses)

Students in anesthesia should be carefully chosen as to qualifications for this work. They must have certain qualities and interests to become successful in this highly specialized field. The characteristics which contribute largely to the success of an individual in anesthesia are self-control and balance, quick cerebration in emergencies and good coordination of head and hands, interest in surgical procedures, and last but not least, interest in human nature. The nurse in training who plans to go into anesthesia should be led to examine herself on these points. If she fails in even one respect she should be made to realize that her work will be more useful in other fields of nursing.

When possible a personal interview is recommended, before an applicant is accepted. The applicant should submit references from the superintendent of the training school from which she was graduated, also references from doctors with whom she has been associated—men who will give an honest opinion as to her physical and mental ability, as well as her fitness for the work.

The applicant should be a high school graduate, and a graduate of an accredited school of nursing, having passed the required state board examinations. She should be between the ages of twenty-four and thirty-four, and should have had at least one year's experience in some field of nursing, preferably surgical nursing, before entering anesthesia. Every new student should have a thorough physical examination, including x-ray of chest, during the first month of training. Good health is a necessary prerequisite, but physical strength is not so important as is the power to control the emotions and mental balance.

Internes and medical students (fourth year) have previously learned the basic theory of anesthesia, and come to the department for practical experience. They should be supervised by a member of the staff, and never left to undertake alone any procedure in which they are not previously experienced and competent.

ANESTHESIA COURSE FOR NURSES

The duration of the course differs in various institutions. The hospitals in the eastern states strongly advocate a twelve months course. Such a course may be outlined as follows:

Preparatory Period

The first two weeks should be devoted to a general summing up of operating room technique, and observation of anesthesia routine. Without knowledge of surgical principles the intelligent administration of anesthetics is impossible. It is appropriate at this time to give lectures on ethics, history, and psychology.

The following ten weeks may be devoted principally to ether, including the theory, methods, and practical administration, under direct and constant supervision. The remaining time may be given over to the theory and administration of:

- Avertin
- Chloroform
- Ethyl chloride
- Spinal
- Caudal and Sacral
- Regional and Local
- Oxygen therapy—Carbon dioxide and its uses in inhalation anesthesia
- General care and upkeep of anesthesia supplies and equipment

During the next twelve weeks, in addition to the above subjects, the theory and methods of administration of nitrous oxide-oxygen and ethylene-oxygen are added, as well as:

- Discussion of new methods and anesthetic agents
- Bi-monthly conferences
- Reading and discussion of students' papers
- Examinations

The above theoretical and practical training is given and supervised by the Anesthetist-in-Chief or her assistants. In university centers it is advisable to have lectures in physiology and pharmacology for the nurse student, by staff members of the medical school.

Definite class periods are necessary and advisable, and a reasonable number of hours should be allotted. The arrangement of these classes should be left to the discretion of the head of the department.

Practical Training

For six months the student has had intensive work in theory and its practical application, under direct supervision. She has become familiar with all anesthetic drugs and their administration. The next and most important step in the student's education is to afford her the opportunity to gain self-confidence and self-reliance. Confidence is developed only with experience. Should this be acquired in the course of the first position which she accepts as a graduate anesthetist? Certainly not; in due consideration for the patient, the student and the employer, self-reliance and confidence should be acquired before graduation.

Psychology plays an important part in anesthesia, and a necessary characteristic of a good anesthetist is a definite interest in the study of human reactions. Fear, which is rarely absent in patients, manifests itself in many ways, hence it is impossible to approach all patients in a similar manner. It is not always possible or easy to allay fear in each case, but the effort of the anesthetist to treat each patient as an individual dispels the patient's fear of being "just a case." She must have sympathy for all. She must be patient with those who have had previous painful experiences, firm with the vacillating, cooperative with those who are making a good fight, business-like with those who demand efficiency, and diverting with children. This calls for masterful application, but the results are ample reward. Anesthesia becomes to the anesthetist engrossing instead of boresome and mechanical, and to the patient it is a bearable instead of an agonizing ordeal. If the confidence of the patient is won and his fears abolished, the induction and maintenance of anesthesia are facilitated and recovery resembles awakening from normal sleep.

One of the first lessons the student has to learn may be termed "ear training." The anesthetist who "hears" every breath her patient takes will avoid serious difficulties. Not only must the rate and rhythm of respiration be observed, but the sound made in breathing must indicate to the well trained anesthetist the depth of anesthesia and the volume of air going into and out of the lungs. She must note any obstruction to the air-way and determine the site of pressure, for respiration must be unhampered whatever agent or method of administration is being used.

The color of the skin, the blood and the tissues give her valuable information. The "eye-signs" tell her a story which she must learn to interpret correctly, hence the power of observation is important. The sense of touch must be trained to measure the rate, volume and rhythm of the pulse and changes noted immediately. All of these important factors can be learned and recognized only by practical experience and contact with all types of patients.

Discussion periods, conferences and examinations are valuable to the student, inasmuch as they develop self-expression, originality and the powers of observation. They make certain points of technique more clearly understood, and the student has the opportunity to discuss her individual problems.

It is advisable to require an additional six months, during which time the student is given full responsibility for the anesthetics she gives on the various services, alternating on general surgery, gynecology, urology, orthopedics, eye, nose and throat, obstetrics, dental surgery, and accident ward, including fracture reductions under fluoroscopy. During this period she alternates with the staff anesthetists in taking night calls. She is taught departmental administrative requirements, including the ordering of equipment. This experience is a necessary and invaluable asset to the student's future efficiency. In a course which is wisely handled the student is not placed in a position of bluffing. She must grasp the fundamentals of anesthesia and acquire the technique of administration before she is expected to take the full responsibility of administering anesthetics. Her self-confidence should keep step with her acquisition of knowledge.

PHYSICAL EXAMINATIONS AND ANESTHESIA CHARTS

The physical examination of the patient prior to the administration of an anesthetic should be of particular concern to the nurse anesthetist. The anesthetist must be fully informed as to the physical condition of each patient that she anesthetizes. The doctor's report of examination of the operative case should include heart, lungs, blood pressure readings, hemoglobin estimation and urinalysis. Previous surgical procedures, recent colds, shortness of breath and habits of life should be noted in the history. If there is evidence of any condition which may make the anesthesia difficult or hazardous, the anesthetist should familiarize herself with the gravity of the risk. The nurse anesthetist should not undertake to administer an anesthetic to a patient, even in an emergency, without an examination of the heart, lungs, blood pressure and urine, by some member of the hospital staff.

The choice of the anesthetic drug and premedication to be used rests with the surgeon. The well trained anesthetist will vary the method according to the condition of the patient, the region of operation, and the requirements of the surgeon, for no one method can be universally satisfactory. No single apparatus is always ideal, therefore a course in anesthesia must enable the student to obtain satisfactory results with simple methods before she is instructed in the use of complicated machines.

There are a number of simple forms for anesthesia charts. The chart should be comprehensive and should contain all information necessary as to the patient's condition before and during the operative procedure, as follows:

1. Complete physical findings
2. Pre-operative diagnosis
3. Pre-operative medication and time of administration
4. Record of pulse, respiration and blood pressure
5. Anesthetic agent, amount used and duration of anesthesia
6. Operation performed
    Drains
    Sponge count
    Packs
7. Fluids given during operation (kind and amount)
8. Names of surgeons, assistants, nurse and anesthetist
9. Post-operative orders, signed by the surgeon

A special record, "Book of Operations," should be kept by the Department, recording the patient's name, location, date of operation, operation performed, surgeon, assistants, nurse and anesthetist; the type of anesthetic used, amount and duration of anesthesia. Important pre-anesthetic and post-anesthetic findings and complications should also be recorded.

With the safe return of the patient to a warm bed the anesthetist's technical duties cease; however, her interest in each case should extend beyond this period. It is the duty of each anesthetist to follow up the patient and she should report to the surgeon any unfavorable reactions. After three days of uneventful progress there is little danger of post-anesthetic complications.

SUMMARY

It is evident that with the rapid advance in surgery and anesthesia during recent years every modern hospital must maintain an efficient and well organized department of anesthesia, directly controlled by the Surgeon-in-Chief and his associate staff.

The organization and management of the department must be such as to meet the requirements of the individual hospital or medical center. In hospitals where a School of Anesthesia is conducted it is necessary to develop a department personnel cooperative and progressive, and capable in every respect of properly instructing and supervising students.

The individual School of Anesthesia must be equipped to meet certain minimal standard requirements. Every effort must be made to afford the student the most efficient training possible. In order to attain high standards intelligence, efficiency, and undeniable high standing of the nurse Anesthetist-in-Chief and her staff of assistants are essential.

One year's intensive study should prepare the nurse to give safe and efficient anesthesia, and should make her fully aware of the vast realms of knowledge and skill yet to be attained. After thrice that many years of administering anesthetics she should still feel a keen interest in each administration, and pray never to cease learning something new each day.

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ANESTHESIA IN GALLBLADDER SURGERY

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Satisfactory inhalation anesthesia for gallbladder surgery is probably more difficult to control than anesthesia for any other surgical procedure, for several reasons, viz.:

1. The position of the gallbladder, that is, its proximity to the diaphragm.
2. The plexus or network of nerves within its vicinity.
3. The type of patient most often requiring gallbladder surgery.

Considering the first: knowing the close association of the diaphragm to respiration and its subsequent interference in gallbladder surgery, the anesthetist, in order to secure the quietest field and hence give the surgeon the best opportunity for doing effective work, must partially paralyze the action of the diaphragm. Therefore, in the selection of the anesthetic, we must keep this in mind.

Second: manipulations of the surgeon within this network of nerves require that we use an anesthetizing agent that is sufficiently potent to paralyze the motor portion of the reflex arc of the brain, thereby preventing any reaction in the form of straining or rigidity in the field of operation.

Third: the gallbladder patient, especially the female, is usually the stout, short, thick-necked individual. Thus respiration may be embarrassed and difficulties in the way of depth of tissue may restrict exposure to the surgeon.

In the selection of an anesthetic that will overcome all these difficulties, we find the gases inadequate—that is, nitrous oxide and ethylene. In our experience we have found it impossible to secure the required degree of relaxation with the gases without producing a decided oxygen want. Dark blood is more or less disconcerting to the surgeon, and in the light of present-day knowledge is harmful to the patient, as severe damage to the liver and heart may follow anoxemia. There is only one alternative in overcoming this oxygen want, that is, the supplementing of ether. We believe that ether may be used with a moderate degree of safety in cases in which there is not a pre-existing pathological condition of vital organs, such as liver, lungs, and kidneys, but where there is a pathological condition existing we firmly believe that the use of ether should be avoided.

It is the object of this paper to consider only that phase of anesthesia involving gallbladder surgery and its subsequent effect upon liver tissue. That we may best justify the above statement by illustrating the untoward effects of ether and gas-ether upon the body, as a direct result of its further damage to an already impaired liver, let us first recall the functions of the liver.

According to Mann of Rochester the functions of the liver in order of importance are:

1. Carbohydrate metabolism
   The liver maintains the blood sugar level of the body, hence serves as a heat-regulating and heat-conserving organ.
2. Protein metabolism
   The liver deaminizes amino acids, converting them to urea, thus enabling their excretion by the kidneys.
3. Fat metabolism
   Questionable, other than the formation of bile, which aids fat digestion.
4. Mineral metabolism
   The liver stores, transforms, and utilizes iron. This process is carried on by the Kupffer's cells (phagocytic cells).
5. Bile secreting functions
   a. The bile contains enzymes which have emulsifying action on fats; also it has antiseptic properties.
   b. It is a source of alkali for neutralization of acids from the stomach.
   c. It acts as an intestinal stimulant.
6. Detoxicating function
   The liver takes up poisonous substances such as chloroform, ether, phosphorus and metallic compounds.
7. Blood forming functions
   a. The liver is an embryonic blood-forming center (hematopoietic).
   b. It is a storehouse for material from which hemoglobin is made.
   c. It is significant in the coagulation of blood, probably the site of the formation of fibrinogen.

8. Phagocytic action of the liver Kupffer's cells brings about a normal destruction of old red blood cells.

Therefore, realizing the vast importance of the liver and its intricate workings, we can see how necessary it is that it be protected against the harmful effects of anesthetics and surgical trauma. With the chemical activity of the liver reduced, we must expect unfavorable effects upon the body generally. In order to prevent a decrease in chemical activity, and hence liver function, we should use the least toxic and least irritating of anesthetics. The choice of the inhalation anesthetics we believe to be the gases, necessarily augmented by an infiltration of the peritoneum and gallbladder base with local anesthesia.

Spinal anesthesia is also another solution of the anesthetic problem in gallbladder surgery. It is the anesthetic of choice in many surgical-risk patients suffering from liver complications or diabetes, but it must not be used indiscriminately.

Avertin should not be used in the presence of liver pathology because of its unfavorable chemical reaction, supposedly similar to that of chloroform. It has been shown that avertin enhances liver damage from 10 to 30 per cent, consequently we never use it in gallbladder surgery, always assuming the possibility of existing liver pathology.

Within the last few years, we have had three or four deaths following the removal of the gallbladder under gas-ether anesthesia, unexplainable other than as "liver deaths." Whether liver pathology existed prior to the operation or whether due to surgical trauma an inflammatory process was set up, which reduced the chemical activity of the liver—being further augmented by a heavy inhalation anesthesia of ether, is not known, but in either case the end result was the same.

The disastrous effect of chloroform upon the liver has long been known, and is no longer questioned, the drug having passed into disrepute and oblivion. But we are inclined to consider too lightly the effects of ether upon the impaired liver. Dr. Wesley Bourne of McGill University writes, "We compared the effects of chloroform, ether, nitrous oxide, and ethylene on the liver by the use of the dye method and determination of bile pigment in blood and urine. It was found that chloroform and ether produced a considerable impairment of hepatic function."

If previous liver injury exists, ether may cause a marked liver necrosis, associated with hyperpyrexia. How can we say liver injury does not exist when an infected gallbladder has lain for years imbedded within its folds? Dr. Graham has shown that hepatitis is a constant accompaniment of cholecystitis.

The question may arise, "Why do not all gallbladder patients die from ether or gas-ether anesthesia?" I reply that the results are in proportion to the amount of ether given or the degree of pre-existing liver pathology or liver trauma from surgical intervention. A stormy recovery or a prolonged recovery—or practically no bad effects, depending upon the above conditions, may be the results.

Another question, "Why no ill results from ether or gas-ether in pelvic or intestinal surgery?" The same answer will suffice. There is not likely to be pre-existing liver pathology in the latter case. Also, the amount of ether used in gallbladder surgery far exceeds that of pelvic or intestinal surgery. In this connection, if ether is necessary in gallbladder surgery it should be administered before the skin incision is made, as much less will be required if given before the nerves are stimulated by the surgical procedures.

Dr. George Crile states, "We have found in our experiments that every organ and tissue has an optimum electric potential and that in the state of anesthesia not only is the potential of the brain lowered but also the potential of every organ and tissue, and that when the potential of any organ or tissue reaches zero, that organ or tissue is dead. That is, the general anesthetic affects not only the brain but every organ and tissue of the body, reducing its electric potential and abolishing the vital short wave radiations.

"Suppose the patient has jaundice and the electric potential of the liver has been seriously reduced as the result of the back pressure of bile. We have known of the dangers of operating upon the patient with jaundice, but for a long time did not appreciate that the danger was in the anesthetic. Ether anesthesia would be given, and in some instances the patient never became conscious. Death was attributed to the disease, but what really happened was that the already lowered electric potential of the liver was reduced to zero by the anesthetic and the vital radiations ceased. Long before the potential of the brain was reduced to the danger point the liver was dead, and the brain cannot function without the liver.

Still quoting Crile, "In an old person the electric potential of all the organs is reduced and radiations are depressed. In such people one or another vital organ may have the lowest potential, and its function fails first. We say that the patient died of failure of the liver, the kidney, or the brain; he really died from the anesthetic.

"When in the course of an operation there is a hemorrhage the patient may die and we say that the hemorrhage was the cause of death. What really happens is that the hemorrhage so lowers the electric potential of the organs and tissues that they cannot bear the further depression due to a heavy inhalation anesthetic.

"When a general anesthetic is employed, nitrous oxide-oxygen and ethylene are the safest. Their effects are the most fleeting and we have proved by experiment that nitrous oxide changes the brain cells less than does ether; and it reduces oxidation less, as shown by the fact that there is but a slight fall in the temperature of the brain throughout the period of its administration as contrasted with a steady and rather rapid fall in the temperature of the brain when ether is given. As nitrous oxide-oxygen interferes less with oxidation, the vital radiations and the electric potential are less reduced, a point which has been proven by direct experiment.

"The safest procedure when general anesthesia seems to be demanded is to give ethylene or nitrous oxide-oxygen until the state of analgesia is attained and then rely upon local, regional or spinal anesthesia."

Dr. Charles Gordon Heyd, New York, says, "We have learned there is a close association in temperature regulation between the heat center of the brain and heat production in the liver, as one-third of the heat production of the body is due to liver activity. According to Crile, when the temperature of the liver is reduced one degree, the chemical activity of the organ is reduced ten per cent and it is possible when the abdomen is opened for the temperature of the liver to drop from one-half to three degrees even if the viscera is not directly exposed. And with the advent of liver exhaustion incidental to disease, surgery, or anesthesia, whereby the chemical activity of the liver is reduced to ten per cent of its normal capacity, death will occur."

Dr. Moses Behrend, Philadelphia, writes, "I have operated on patients, performed a cholecystectomy and within twenty-four hours the temperature would rise to 106 or even 107 degrees Fahrenheit, and the patient would die within twenty-four hours. These deaths are unexplainable. I believe there will be less of these liver deaths on account of the use of spinal anesthesia. I believe that in former years, prior to the universal use of spinal anesthesia, many deaths were due to rough handling of the site of the operation. Spinal anesthesia has eliminated that altogether."

Quoting Dr. Crile again, "We used to see 'liver shock' when we used deep inhalation anesthesia; when huge retractors were applied to the liver; when the liver and intestines were allowed to cool. The prevention of this condition coincided with our knowledge of the effect upon the liver cells of ether anesthesia, of cooling of the viscera, and also of the effect upon the organism of damage to the liver cells. It is essential, therefore, that the patient, especially one in whom the liver may already have been damaged by the back pressure of bile as the result of obstruction, be carried through the operation in such a way as to avoid serious interference with the function of the liver.

"To conserve the liver it is necessary to avoid heavy inhalation anesthesia; to avoid cooling of the intra-abdominal areas; to avoid rough manipulation—all of these depress the liver function. If the liver function is depressed the brain cannot function. No comparable effect is produced by the depressed function of any other organ or part of the body.

"In most cases the operation can be easily and painlessly performed under local, regional and splanchnic anesthesia with nitrous oxide or ethylene analgesia, without any resultant shock. In fat subjects spinal anesthesia is preferred, but it should never be employed in the presence of an associated high blood pressure or of nephritis."

Cyclopropane is yet in the experimental stage, but according to all laboratory tests no evidence of liver necrosis can be found that can be attributed to cyclopropane. Dr. Bourne reports that cyclopropane does not damage the normal liver even after repeated administrations, nor after long administration, nor does it enhance liver damage nor impede the usual recovery of a damaged liver.

Cyclopropane has the potency of chloroform and ether, but without their toxic and irritant qualities. Our experience with cyclopropane leads us to believe that it is a safe, controllable, non-irritating and non-toxic anesthetic agent. It permits good oxygenation, it is pleasant to take and provides sufficient relaxation when given properly. Consequently cyclopropane promises to be a satisfactory inhalation anesthetic for gall-bladder surgery.

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GENERAL ANESTHESIA FOR INFANTS UNDER TWO MONTHS OF AGE AND METHODS OF ADMINISTRATION

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Last year I received a letter from one of the Detroit hospitals asking me what anesthetics we administered to infants. This question gave me the idea of writing upon this subject.

There has been considerable discussion in regard to administering a general anesthetic to infants under three or four months of age. I have had the opportunity to administer about two hundred anesthesias at the Children's Hospital, Oakland, California, during the past five years. These infants ranged in age from fifteen hours to eight weeks. The great majority had a diagnosis of pyloric stenosis, a number were harelip and cleft palate, several spina bifida, several birth injury, one appendectomy, age four weeks, and one bilateral mastoidectomy, age eight weeks. We consider these cases as great a risk as any patient who for some reason is classed as a poor risk.

The pre-operative preparation of the patients suffering from pyloric stenosis consists of a stomach lavage, being given until water returns clear. It is most essential to maintain body heat. We therefore wrap the babies' arms, chest and limbs in cotton batting (the type used in orthopedic work) with a small blanket over chest and limbs; a covered hot water bottle, at a temperature of 100 degrees Fahrenheit, is also placed under limbs.

Drop ether is administered slowly, with the mask held well off the face at all times. Infants hold their breath at the slightest provocation, so that sometimes the first whiff of ether will cause them to do so. One must proceed very slowly in order to prevent any irritation which will start an excess flow of mucus. After the anesthesia is well established I find that these patients go along nicely on a minimum amount of ether, color remaining good. Occasionally a patient will look rather pale; when this occurs oxygen is administered. After the abdomen is opened and the surgeon is ready to release the band at the pylorus, a small catheter is passed so that any fluid or gas will be expelled. If this is not done the distention will often cause an embarrassment in respiration and a regurgitation which is dangerous. If this occurs, suction should be used immediately and the respiration well established before the surgeon continues his work.

Anesthesias for harelip and cleft palate operations are rather difficult to keep smooth because of the manipulation in the mouth and throat, and the continuous suction which withdraws much of the ether. We use a goose neck attachment to the ether machine for operations for repair of the lip and nasal catheters for repair of the palate.

The patients we have operated for spina bifida have ranged in age from fifteen hours to four days. They are delicate operations and therefore take considerable time to perform. Body heat must be maintained, and a small roll placed under the chest to give the patient a better position for breathing. The anesthetic is administered cautiously, followed by oxygen.

For patients suffering from birth injury, I find it convenient to use the nasal catheter. As a rule these patients are placed face down while the decompression is being performed. I believe it is wise to have the water bottle attached to the ether machine so that the anesthetist can watch each bubble of ether. As a rule, after the anesthesia is established it takes only five or six bubbles per minute to keep a smooth anesthesia. The anesthetist must be constantly on the alert for a change in pulse or respiration.

Many surgeons are opposed to the administration of general anesthetics to small babies, but fortunately we have not had an anesthetic death in seven years, or a post-operative death which we felt was the result of the anesthetic. Two of the patients with pyloric stenosis died the ninth and tenth day post-operative, due to malnutrition.

I have written to several hospitals inquiring what anesthetics were used for these small infants (unfortunately in our section the surgeons will not allow ethylene to be used). Several report that they are using ethylene with good results. One reported using novocain, and another morphine, 1–100th grains, and said the babies cried and squirmed throughout the operation. I personally feel that the babies are not nearly so exhausted if given a general anesthetic under proper conditions, as those who wear themselves out crying and squirming while being operated upon under local anesthesia.

* * *

COST OF ANESTHETIC SERVICE

MIRIAM G. SHUPP
Strong Memorial Hospital, Rochester, N. Y.

I am sure it is the desire of each one of us as anesthetists to do efficient work. To do so means, not only administering anesthetics properly but also economically. I consider the most able anesthetist the one who gives the best anesthesias from the standpoint of the patient and the surgeon, as well as from the financial standpoint.

Every well managed anesthesia department should include a comprehensive system of records. These should include daily records, monthly and annual summaries. A case book, made especially for keeping the necessary data, may in some instances be prohibitive. A very satisfactory one can be made at little expense by using a composition book with a substantial binding. This of course will entail a little more work than having one made for the purpose, but is well worth the added effort. The book used should be at least eight by eleven inches, with from twenty to twenty-five lines to a page, with columns and headings filled in.

The following is a suggestive outline of data for the headings, which can be modified to suit individual requirements.

1. Patient's unit number
2. Date
3. Division
4. Age
5. Name of patient
6. Operation
7. Surgeon
8. Pre-medication
9. Anesthetic and dosage of
10. Time anesthesia starts
11. Time anesthesia is discontinued
12. Time operation starts
13. Time operation is finished
14. Total time
15. Gas time
16. Machine used
17. Condition pre-operatively
18. Condition at close
19. Anesthetic complications.
20. Post-anesthetic sequelæ
21. Anesthetist

This case book may be kept by one person or each individual may be made responsible for her cases.

The monthly report should consist of a summary of the daily records. This may be detailed or brief. The following is a suggestive outline for the monthly report:

1. Number and hours of each type of anesthetic
2. Total number of anesthetics
3. Total hours of anesthesia
4. Total hours of gas anesthesia
5. Number of cases in each department
6. Post-anesthetic complications—number, kind
7. Any anesthetic casualties
8. Total amount of anesthetic supplies used, including gases, ether, avertin, et cetera.

The annual report is merely a summary of the monthly reports.

A column for "machines used" and "gas hours" should be provided in the case book. If the gases are used from a central supply and piped to the operating room, daily averages can be made, but if the "G" cylinders or the smaller sizes are used in the operating rooms, a daily check on gas consumption is quite impossible. If the "G" tanks are stationary in the rooms, the hours of anesthesia from each tank can be ascertained by using room number instead of machine for the heading in case book. When the "G" cylinders are mounted on carriers with the machine, the hours obtained from each cylinder can then be kept track of by machine. Where the smaller tanks are used on the machines, this is done by number of tanks used on each machine and number of hours each machine is used. Checking the hours on every tank does not seem imperative but an occasional check may be desired.

At the end of the month the number of gas hours are totalled, as well as the number of cylinders used, multiplied by the amount in each cylinder, and the average figured by dividing the total amount used by the hours of anesthesia for the month.

If the gases are piped to the operating room from a central storage tank, the daily, weekly or monthly average will be accurate. If only small cylinders are used each monthly average is fairly accurate. If "G" cylinders are used from each operating room or carried on the machines, a single monthly average is not accurate, as a tank of gas requisitioned the latter part of the month would be charged against that month but most of it used in the following one. Usually the average if higher one month will be lower the next. However, this variation in monthly averages should be within certain limits; for example, if one month the average were 30 gallons per hour and the next 90, one would suspect waste in the latter month. This is why frequent checks are important. At the end of each year a grand average can be determined.

In the early history of anesthesia, it was thought necessary to feed nitrous oxide gas at the rate of 100 to 150 gallons per hour and ethylene in relatively large amounts. We now know that partial or total rebreathing can be practiced in almost all patients receiving gas anesthesia, thus minimizing considerably the cost of gas anesthesia.

Total or complete rebreathing merely means that after the proper anesthetic tension has been established in the body, the breathing circuit is closed, the gases entirely or almost entirely shut off, oxygen fed in amounts to meet the metabolic need, and the excess carbon dioxide taken from the system by means of a cannister of soda lime attached to the apparatus through which the respirations pass.

Partial rebreathing means administering the gases at a rate of flow less than the respiratory volume of the patient, so that part of each respiration is fresh gases and part rebreathed gases, the bag acting as a reservoir, and the exhalation valve the regulator of pressures.

The amount of rebreathing that can be practiced with each individual will depend upon the type of individual, pathology, pre-medication, et cetera. Some of the pathological conditions where less rebreathing is indicated are: tuberculosis, hypertension, heart disease, toxic goitres, and septic cases.

One of the first essentials in the use of partial rebreathing or the carbon dioxide absorption method is an absolutely leak-proof face mask. There are a number of satisfactory types of mask holders available. In using these one conserves the anesthetist's energy as well as the anesthetic gases.

There is a great saving in the use of the larger cylinders of gases. A "G" cylinder of nitrous oxide contains twelve and three-fourths times as much as the "D" size cylinder, but only costs about seven and two-thirds times as much. A "G" cylinder of ethylene contains fourteen times as much as the "D" size cylinder but costs only eleven times as much. Large cylinders of commercial oxygen can be purchased at much less cost than medicinal oxygen and commercial oxygen has proven satisfactory for anesthetic purposes. For gas inductions or when ether is to be the principal anesthetic agent, or for very short gas cases, it may be better to use small cylinders rather than turn on the large tanks or open the main lines.

When the "G" cylinders or the lines from the central storage tank are open and the machine is to be in continuous use, the valves at the machine only may be closed at the end of each case. However, if the machine is not to be used again for a time, the cylinder or wall outlet valves should be closed and pressure gauges released. This prevents leakage from the possibility of valves being left open on machine, or waste from leaks elsewhere in the apparatus. It also saves wear and tear on the gauges, with the result that they need overhauling less frequently. The cylinder or gas valves at the wall outlet can be closed before the completion of the case and the gas in the tubing and machine utilized. If there has been an error in judgment as to time, the large cylinders may be re-opened or the small cylinders turned on for the remaining time.

Machines should be checked at frequent intervals for any leaks in connections, tubing and bags. To use badly chipped ether bottles is not economy. A check should be made at the end of each day's work, to see that all cylinders or feed lines are closed, pressure gauges released and all filters shut off.

In many institutions postoperative carbon dioxide hyperventilations, for varying periods of time, are routine. There are trucks for the "G" cylinders which are noiseless and easily moved about. These can also be taken into the operating room and used for hyperventilation at the close of ether anesthetics, thereby eliminating the use of the smaller cylinders. A tank of 10 per cent carbon dioxide, with 90 per cent oxygen, is a safe mixture for all except infants and children, and the desired results can be obtained with less of the gases than when a lower percentage of carbon dioxide is used.

We will now briefly discuss ether. We have been taught and have read that ether should not be used for anesthetic purposes, after the original container has been opened more than 24 hours. In consequence ether has been purchased in one-quarter, one-half and 1-pound cans (the smaller the container the greater the cost per pound).

The March 17th, 1934 issue of the *American Medical Journal* contained an article entitled "Stability of U.S.P. Ether After the Metal Container is Opened," by Harry Gold, M.D., and David Gold, B.A., New York. A reprint of this article appeared in the March and April, 1935, issue of *Anesthesia and Analgesia*. In brief, the results of their experiments showed that ether does not deteriorate or form impurities (the most important being peroxides, aldehydes and acids) in a short period of time after the original container is opened, if the container is properly corked, and stored under ordinary conditions; also that U.S.P. ether is as safe and effectual as the more costly and highly refined ethers for anesthetic use.

In consequence of the published results of their experiments, ether of several well known manufacturers was given like tests in the biochemistry department of our institution. These experiments extended over a period of about six months and the results of these tests were the same as those found by Gold and Gold. A quantity of the ether tested and found to be free from impurities, was then given to the Anesthesia Department to be tried out clinically. This was done rather cautiously at first. When the members of the staff were given ether to use and not informed whether or not it was the test ether, their decision, based upon the patient's reaction to the anesthetic and the amount used, was as often incorrect as correct. These patients were followed very closely post-operatively. None developed any unusual post-operative complications.

At the conclusion of these tests, ether was purchased for use in the Anesthetic Department in 5-pound cans. The ether is kept in the original containers, and when needed for use is poured into half-pound copper cans, which we have had made especially for the purpose. Occasionally a sample of the ether is tested in the laboratory for impurities. To date these tests have all been negative.

We have been using the 5-pound cans of ether since January of the present year, and clinically have not been able to demonstrate any difference between the ether in one-quarter and one-half-pound cans and that used from the 5-pound cans over a period of several days. Purchased in the 5-pound cans, the cost of ether has been cut in half. If bought in the larger drums, as the authors recommend, using 55-pound drums, the cost of ether is one-sixth that purchased in one-quarter to one-pound cans (authors' figures).

The following figures are for the actual cost of anesthetics, and the total cost of anesthesia service. The figures for the total cost of anesthesia service are only approximate, as these figures were arrived at by using what I should consider an average salary:

COST OF ETHER ANESTHESIA

ADULTS (180 to 240 c.c. per hour average) (200 c.c. using 5-lb. tins)		$ .14 per hour
with nitrous oxide plus oxygen induction, using D cylinders		
nitrous oxide	.09	
oxygen	.03	.12
		.26 first hr.
Each additional hour		.14
CHILDREN (120 to 180 c.c., average 150 c.c.)		.09 per hr.
with nitrous oxide plus oxygen induction, using D cylinder		
nitrous oxide	.09	
oxygen	.03	.12
		.21 first hr.
Each additional hour		.09
GAS-OXYGEN		
Nitrous oxide plus oxygen		.32 per hr.
Ethylene plus oxygen		.34 per hr.

(The methods used in the gas-oxygen anesthetics from which these figures were obtained included both total and partial rebreathing.)

If ether is added to the gas mixture, the cost would be increased at the rate of about 2 cents per each 30 c.c. used; again figuring on the use of 5-pound containers. Avertin costs about 15 cents per each c.c. used; evipal, 50 cents per gram, duration of anesthesia about 20 minutes.

COST OF ANESTHETIST'S SERVICES

On the basis of a salary of $125.00 per month plus $45.00 for maintenance, total $170.00 per month, eight hours per day, 26 days per month, the cost per hour is 81 cents, but this does not allow for the time not engaged in the actual giving of anesthetics. In order to make the anesthetics administered completely cover the salary, we will divide the salary into anesthetic hours. Using the same salary figure, $170.00 per month and taking as an average one hundred anesthetic hours per anesthetist per month, the cost per hour would be $1.70.

COST OF INCIDENTALS

Gauze, towels, replacing worn-out parts, replacing equipment, repairs, et cetera	.19 per hour

ACTUAL COST OF ANESTHESIA SERVICE

Including:
1. Cost of Anesthetist's Services
2. Incidentals
3. Cost of Anesthetic Materials

ETHER for adults, with gas induction	$2.14 first hour
Each additional hour	2.02
ETHER for children, with gas induction	2.10 first hour
Each additional hour	1.98
GAS-OXYGEN	
Nitrous oxide plus oxygen	2.21 per hour
Ethylene plus oxygen	2.23 per hour

Any ether added would increase cost according to amount used.

Aside from the initial cost of gas apparatus, and the expenditures for upkeep, it is apparent from the foregoing figures that there is very little difference in the cost of ether and gas anesthesia. Therefore gas anesthesia should not be denied patients because of the supposed difference in cost.

NATIONAL ASSOCIATION CHANGES HEADQUARTERS

The headquarters of the National Association of Nurse Anesthetists are now located at 2073 Adelbert Road, Cleveland, Ohio. Since the organization was founded in 1931, the headquarters have been maintained at the University Hospitals of Cleveland. The rapid growth of the organization in the past two years has necessitated an increase of office space, and it also seemed wise to establish more permanent headquarters.

GIVEN AT THE CLINIC WEDNESDAY MORNING, OCTOBER 2nd, PRECEDING DEMONSTRATION OF ENDOTRACHEAL ANESTHESIA

MILLARD F. ARBUCKLE, M. D., F. A. C. S.
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I want to thank you for your kindness in giving me the opportunity not only of seeing so many of my old friends as I see here, but for the very nice evening yesterday. I insisted upon being heard, last night, but your presiding officer thought maybe it would be better if I kept quiet, so she did not let me talk.

I feel somewhat ill at ease in talking to so many women at once. I never in my life saw so many together at one time. But I should not feel so because as a matter of fact, I was a nurse before I was a doctor. I used to work with the nurses all the time, and they fed me and clothed me and then enabled me to get through medical school. Many of you may know Miss Warr, but if there are any doubts in your mind, she was the chief one to look after me and help me get clothes and to get through school, here at the City Hospital.

Dr. Sachs told you last night that he used to see internes giving horrible anesthesias. That is another reason why I wanted to talk, because I was one of those internes. I am not sure whether he was able to judge then what was a good anesthesia, but he can now. When I was working at the City Hospital as an orderly, the anesthesias were bad, in many instances, but there were many things to take into consideration—the type of patient and his environment, especially in his past; as you all know, those City Hospital patients were notorious for being alcoholics.

We had a case one hot June morning—a little stocky-built man, who was the fat, roly-poly type, and an alcoholic. The interne started to give him an anesthetic and he got about in the beginning of the second stage, when he held his breath. The interne tapped him on the chest and admonished him in no uncertain terms to breathe. When he slapped the fellow on the chest, he suddenly went into action. I weighed about a hundred pounds or a little less, and had not been at the City Hospital long enough to regain a lot of weight that I had lost due to an infection, so I was not very strong. The patient was perspiring freely and his only covering was a bandage around the field of operation. They were going to do a herniotomy and he had just a string around him and a sheet thrown over him. When he began jumping and squirming, he slipped through my hands and sped out through the door and down the halls of the hospital. As we rounded the corner, we met the Superintendent, Dr. John Young Brown and his staff and Miss Warr and her staff, on what are nowadays called "grand rounds," this man, in the second stage of anesthesia, running as hard as he could and me after him. I was admonished by Dr. Brown to catch him before he got into the yard. I did not catch him before he got into the yard, but when he reached it and got some air, he woke up and was as much disconcerted as anybody else.

I do think there is an advantage in having nurse anesthetists. I have seen more than one patient lose his life, or come near to it, because the doctor was busy watching the operation and the patient got so much anesthetic that it nearly killed him. If the nurse is interested only in the anesthesia, she can do it far better. Of course they must be carefully trained.

There are many kinds of anesthetics and all have their champions. I think I have seen anesthetics given under nearly all conditions. During the war, in the field, many times we had to give anesthetics and operate in a tent—always in a tent—with things going on all around us and above us. There we gave, as a rule, the old A-C-E mixture—alcohol, chloroform and ether. We had to have anybody give it.

I told some of the internes, some of my friends, more than once, of the trick we used to play: We had one padre who was famous for staying at mess and drinking all the Scotch while the rest of us were working, so if there was any possibility of doing so I would get the padre down there and make him give anesthetics, and he usually simply sat up and poured it on. There was no possibility of having a lot of equipment—we simply had a can of this dynamite and we gave it to them. That is one extreme. I don't know what these modern machines are—I can't keep up with them, but they are the other extreme in equipment. I mention this to emphasize that the simpler the equipment, the fewer chances for getting into trouble at the crucial moment; if you have too many gadgets to get out of order, that is, the more you have, the more likely you are to have trouble. I call them the "Goldberg machines."

I have put together a few slides, and by the way, these are taken from Dr. Jackson's book on Bronchoscopy. It is the latest edition and I recommend it to you, if you are interested in reading up on these things. I have taken extracts from it. He gives an admirable dissertation on the whole subject of the anatomy of the larynx.

I am sure you are acquainted with intratracheal anesthesia. I think intratracheal anesthesia is the best method of giving anesthesia, especially for thoracic surgery and for surgery around the mouth, the throat, the sinuses and the larynx. As a matter of fact, if I had to have a long anesthesia myself, and there was available someone who could give the intratracheal, I believe I would prefer it for the sake of my vital organs (that is, the effect of the anesthetic on them), because the anesthesia can be carried with less of the drug, and better control. There is less danger of respiratory difficulties during the anesthesia and less danger of postoperative complications. If the intratracheal catheter is inserted properly, there should be no injury to the mouth, the pharynx or the larynx. After it is once in and the balloon around the catheter is inflated, it is not possible for secretions from the pharynx to get into the larynx, and for the same reason it is possible to control the amount of anesthetic. Furthermore, it is possible to slide a catheter through the intratracheal tube and remove from the trachea the secretions present, such as mucus, but more especially pus which has been expressed into the bronchial tubes during the manipulation of the lung in thoracic surgery for malignant disease or other disease of the lungs. That point is important. I am sure many of the postoperative complications after pulmonary surgery result from an overloading of the lung by this massive dose of pus from an abscess from the diseased area, suddenly deposited in the normal lung.

Now, there is a tube which is passed through the nose and into the larynx—the Magill tube. I have never used it—I think it is rather complicated—but some of my friends use it. If you employ a tube large enough to permit satisfactory respiration, I do not see how it can be done without injurious trauma to the nasal mucus membrane, sometime serious injury. The catheter passes through an infected field and into the larynx, which in itself is bad. In addition, you cannot have a balloon on the outside of the catheter, at least I do not see how it is possible. Therefore, you cannot block the trachea. Furthermore, the possibility of not being able to put a catheter around that curve through the nasopharynx and down into the larynx, it seems to me is greatly increased by the anatomy of the field traversed. I prefer to put the catheter directly into the larynx—a semi-rigid catheter which will at the same time conform to the necessary curving that goes with placing it through the laryngoscope and pushing it aside a little so as to see where it is going. I always like to see what I am doing when working, and this is not possible with the catheter through the nose. The maintenance of positive intratracheal pressure is necessary.

Years ago, long before any of you thought of giving anesthetics, Dr. Willy Meyer, in New York City, built a negative pressure cabinet for doing lung surgery when he wanted to open the thorax. It was a terrible thing to work in. Somebody found later that by using intratracheal anesthesia, positive pressure with the outlet valve, that the respiration could be carried on normally without this bunglesome vacuum chamber. That, of course, is one of the most important steps in the rapid and great development in the field of thoracic surgery within the last few years.

Under normal conditions, the curvatures of the pharynx and the trachea follow the curvatures of the spinal column, and I had a slide made which outlines these curvatures. This brings up another point, that is, the use of metallic airways. The tongue is suspended from the jaw bone by muscles. When a patient is placed deeply under an anesthetic and lies on his back, the jaw drops back and the tongue drops down into the throat. Even if the jaw does not drop down, the tongue drops back and, in order to bring the tongue forward, if the hands are placed underneath the jaw and the jaw brought forward, you can usually raise the tongue up off the larynx. Placing a pharyngeal airway in the mouth, behind the dome of the tongue, does the same thing. I have no objection to the use of an airway, provided the one who puts it in does not do a traumatic operation on the pharynx or on the larynx, at the same time, which so often is done. I know of cases in which serious lacerations of the soft palate, of the fauces, and even of the larynx, have occurred, with even the necessity for tracheotomy two or three days later, as a result of the infection and edema which followed the laceration. I think the better way of putting in an airway is to take a tongue depressor, which will go into the mouth and pick up the tongue, pull it out of the way, and slide the airway in gently and without any trauma to the tissues, and then let the tongue down on it.

Dr. Jackson has written a paper on the subject of asphyxiation by letting the tongue drop back. (*Slide*) Here is the normal position of the tongue, which has dropped down on top of the larynx and pressed the epiglottis down on top of the larynx. It is a very simple matter to take hold of the jaw and lift it up. It is much easier to put the airway in and leave it there. (*Slide*) This patient is lying flat on his back. Here is this same curve, with the head raised up, and here is the laryngoscope introduced into the mouth. The tongue is pushed forward, and here is a straight line down into the larynx.

There is a detail that I would like to impress on you as important as anything that you have to keep in mind in introducing the intratracheal catheter. In the first place, you have to have the patient asleep, as a rule, before you can introduce the laryngoscope and the catheter. It will be a great advantage to you if you have your patients thoroughly relaxed. (*Slide*) Here is a patient lying flat on his back with a pillow under his head, and you see this curve down here. His neck is flexed, that is, his head raised forward. You still have the curve, so in order to straighten out this curve, his neck is brought forward (as you will recall in those

X-ray plates). His cervical spine is straightened out and extended on the occipito-atloid joint, and here is the line from the teeth straight down. Now, this correct line will be nullified if the patient is allowed to raise his shoulders, which he will do unless someone is assigned to prevent it; that is, if the patient is awake or if he is not well asleep it will probably occur. It is necessary to have someone to hold the head and someone to hold the shoulders, and then I think it is essential to have someone hand the tubes to you.

I prefer the Flagg instrument because it has a slide on the side which leaves a groove open. There never has been a wholly satisfactory instrument made for introduction of an intratracheal catheter, so far as I know. They all have disadvantages, but I believe the Flagg is more suitable for the introduction of the intratracheal catheter.

Now, when you look down into the mouth with a laryngoscope, it is essential to have a good light, and to have everything ready. As you look down, the first thing you see, of course, is the roof of the mouth. You are standing above the patient and things are upside down. You see the roof of the mouth, the base of the tongue and the dome of the tongue. Slide the instrument behind the dome of the tongue and you come down into the hypopharynx and the first thing you see is the epiglottis. You simply slide the end of the laryngoscope underneath it without pushing the laryngoscope down on the larynx, because that is where you would do hurt to the larynx. You have to be extremely gentle in the manipulations, because edema follows so readily after trauma. Lift up the epiglottis (and you are looking right through your scope at the epiglottis). If your patient is not deeply under the anesthetic, you will find as soon as you touch the larynx that it closes, (Jackson has called the larynx the "watchdog of the lungs," and rightly so, because the minute you touch it, it closes). If you wait (and it seems very long sometimes), it will finally relax and you will see the larynx open up and carry on respiration again. You have your tube in your hand, lubricated, with the balloon on it and everything in readiness. Slide it down through the scope, and if the larynx closes off again you can wait and listen. You cannot see then, because your catheter is in your scope. The minute you hear breathing again, insert the catheter quickly.

How do you know whether or not the catheter is in the larynx? That is not always easy, because you cannot see down there. If it is in the larynx, the patient will cough and breathe in your ear through the catheter. The patient may hold his breath for a moment, but he cannot hold it long with the catheter in, and if he does not breathe through the tube, take it out and expose the larynx again. Sometimes if cocaine is applied to the pharynx it will help to quiet things so you can get the tube in, but the main thing is to have the patient quiet and have the mouth open moderately—not too widely.

I think it is important for the anesthetist to be prepared to do many things besides give the anesthetic. For instance, if a mouth gag is inserted and the patient has some loose teeth and one is pushed out, later on it may show up in the lung and the patient will have a lung abscess. If a tooth is missing and you report it to the doctor, he has the opportunity to get an X-ray plate of the chest, and if in the lung it can be removed before the patient gets a lung abscess, which is certain to result if the tooth is left there. I find that people who are giving anesthetics who are alive to the possibilities, who have their eyes and their ears open and have not been up too late the night before, can be of great help in operating.

Now it is possible that you might want a discussion to follow. You may have some questions you would like to ask, and if so, I will be glad to answer them.

Question: Do you think it a good plan to use cocaine? Don't you get patients who have an idiosyncrasy?

Dr. Arbuckle: Yes, we do, but I have found that those things are not so active with a patient under an anesthetic, as a rule, as they are otherwise; whether the anesthetic counteracts it or not, I do not know. As a matter of fact, the best immediate treatment for cocaine poisoning that I know of is the inhalation of ether. I have seen patients go into more or less shock from the injection of a local anesthetic. I never inject cocaine.

Question: Do you use ether entirely with those cases?

Dr. Arbuckle: No, not necessarily. We have done many of them here with nitrous oxide. Of course, it is more difficult to get them relaxed than with ether.

Question: What premedication and dosage do you use?

Dr. Arbuckle: There are arguments both for and against the use of morphine before a general anesthetic. There is no question but that it is a good remedy, for many reasons, including the patient's mental welfare. On the other hand, it does obliterate the cough reflex, according to the amount of dosage, and pulmonary secretions are allowed to collect.

By the way, do not forget the use of carbon dioxide and oxygen after any anesthetic, local or general (and I think as much after spinal anesthesia as after general anesthesia because of the possible postoperative complications, such as collapsed lung, et cetera). The percentage of cases of pneumonia has been decreased very remarkably (I do not know the figures) since the use of carbon dioxide and oxygen routine in every case operated on was started. There is a definite method for giving that treatment. I think it is every fifteen minutes until the patient is awake, then every two hours for a day or two.

3rd Annual Convention
NATIONAL ASSOCIATION OF NURSE ANESTHETISTS
Hotel Chase, St. Louis, Oct. 1st, 1935

Banquet — National Association of Nurse Anesthetists
Tuesday, October 1, 1935, Hotel Chase, St. Louis, Mo.

BANQUET SPEAKER, TUESDAY, OCTOBER 1st

ERNEST SACHS, B. A., M.D., F. A. C. S.
Professor of Clinical Neurological Surgery
Washington University School of Medicine, St. Louis, Missouri

Madam Chairman, Ladies and Gentlemen:

I confess that I am very much embarrassed at being the speaker at such a large gathering, not accustomed as I am to public speaking, and I feel just as uncomfortable, I think, as a woman of middle age, rather stout, I heard about this summer when I was in Ireland:

She was going to confession and as she got to the church, on the lawn in front of the church she saw this man doing handsprings and cartwheels all over the lawn. She did not know who he was, he happened to be a circus performer. She went in to confession and asked somebody what this man was doing out there, they said, "He has just been to confession." So, she turned around and started to leave the church and the priest stopped her and asked her why she did not come to confession, and she said she didn't like the kind of penances he was handing out. I feel about as uncomfortable as she did.

It is always a trying thing to be called upon to say something on an occasion of this sort, because I am always in a quandary just what line to follow, and one never knows how things one is going to say are going to be received, particularly if one is trying to tell a funny story or a joke, which isn't particularly in my line.

I think you probably all know this one: The difference between an Englishman when he hears a joke, a German when he hears a joke, an Irishman and an American—you all know it, don't you? An Englishman laughs three times; the first time when he is told the joke, the second time when he has it explained to him, and the third time when he catches on. A German only laughs twice, when he is told the joke and when it is explained to him. An Irishman laughs all the time, but he does not laugh at the joke, he is laughing at the one he is going to tell afterwards. The American never laughs, he has always heard it before.

It was my idea, when I was invited to come here, that I would be expected to tell some stories, and I got some really good ones together. Imagine my embarrassment, therefore, when I was told that I was, under no circumstances, to tell any stories; that I was, under no circumstances, to be frivolous; that this organization was such a very serious group that I must be most serious and say something very worthwhile, which is the last thing in the world that I can do. So, these good jokes that I had in reserve I am afraid I cannot tell.

I had no conception of the huge size of this organization. It interests me tremendously to have heard from your President, tonight, that you have over 1,200 members, which is quite extraordinary.

In trying to decide what to speak to you about, I thought perhaps it might interest you to have me say a few words about the changes in anesthesia, that I have seen in the years I have been practicing surgery.

There isn't anybody here, I think, who remembers the time when I started as an interne in a New York hospital, at the beginning of this century. At that time all the anesthetics were given by the internes. The first six months of an interne's surgical existence was devoted entirely to the giving of anesthetics, and all those anesthetics, or practically all were given with the open ether mask. I can assure you I am not exaggerating when I tell you that many of them, as I think back, were simply hideous, and it is dreadful to think to what many of these patients were subjected. Once in a while, you would get an interne who had a knack of giving anesthesia, but far more frequently you had an interne who not only did not take to it but who did not care about it, and his attention was more often directed to the operation than it was to the anesthetic.

At that time, in New York City, there was just one professional anesthetist, whose name is no doubt familiar to some of you, Dr. Bennett, the originator of the Bennett inhaler, which at that time just came into use and was rather popular. It was very unusual for a patient to have the privilege of having Dr. Bennett give the anesthetic, because he was in such great demand, and I remember how in his open roadster he darted from one hospital to the other, surgeons waiting until Dr. Bennett arrived. Of course, it was only the wealthy patients who could afford to have Dr. Bennett, and all the other patients were given anesthetics by the internes.

My first insight into any other form of anesthesia was when I finished my hospital interneship and paid my first visit to the Mayo Clinic, in 1906 or 1907. There they had nurse anesthetists, and that was the first time I had ever seen nurses give anesthetics, and I was greatly impressed by the smoothness with which the anesthetics were carried through at that time. If I remember correctly, they were still giving ether with an open cone but they did it with great skill.

Then I went to Europe, spent several years in England and for the first time, aside from this experience at the Mayo Clinic, saw what expert anesthetists could do. Of course, at that time in England, the anesthetic of choice—and it is to a considerable extent still—was chloroform. Nobody was allowed to administer an anesthetic in any London hospital or in any London clinic who was not a qualified physician, and there were men who were devoting themselves exclusively to anesthesia in practically all the London hospitals.

Just about that time, there was introduced an apparatus the name of which is hardly known here, the Vernon-Harcourt inhaler, an apparatus by which percentage chloroform could be given, an apparatus that I saw used a great deal because, at that time, the man I was working with at the National Hospital, Victor Horsley, was using percentage chloroform exclusively for his brain cases.

It is rather interesting that, at present, in England (I was over there this summer) anesthesia is still exclusively handled by trained physicians, but most of them now are women physicians. When I was there first, there were no women physicians in England at all—they never graduated them. As far as I was able to observe, they do not use chloroform in cranial work; they have adopted the American method of giving anesthetics to cranial cases.

In Germany in 1908 they were using some rather complicated pieces of apparatus to give anesthetics in percentage quantity, but the apparatus was cumbersome and the anesthetics were very badly given. I became interested in the problem of anesthesia because, at that time, I had already made up my mind that I was going into the particular field with which I have busied myself. The problem was—how can the anesthetics best be handled? At that time and still today, I have been interested in comparing the advantages of a nurse anesthetist and a doctor anesthetist.

When I came back to New York, where I started in practice, the only anesthetists I could make use of were doctors. There were, at that time, three or four physicians who were devoting themselves to anesthesia and I got in touch with one or two of them, tried them out, and made use of them for a year or two, but I found in the very beginning that it was most unsatisfactory. I found, in the first place, that in many instances the men who were giving anesthesia were simply doing it as a makeshift to tide them over until they could go into practice; they were not devoting themselves to anesthesia as a life work. That, on the face of it, is a very serious fundamental objection, it seems to me.

Then, too, when it came to the younger men, they were too much interested in what was going on in the operation, which, of course, is more than objectionable, it is reprehensible. But the chief objection, as I saw it, was that there was a changing population of anesthetists. Then too, the anesthetists were not willing to stay with their patients; time and time again I recall anesthetists who would leave the patient just as soon as the patient had been put to bed, sometimes before that, because they would have to rush off to give another anesthetic. So, when I came out here to St. Louis in 1911, I was perfectly convinced that the only way of handling anesthesias effectively was by having a trained nurse anesthetist. At that time, my chief, Dr. Fred Murphy, with whom

I came out here, brought to St. Louis a nurse anesthetist from the Massachusetts General Hospital where he had been working. From that time, with a short interruption during a part of the war, I have made use of nurse anesthetists exclusively, and on the few occasions when I have made use of physicians, I have always had reason to regret it.

I am not saying this to flatter you, but I sincerely and honestly believe it. I think the best way of handling anesthetics is by the nurse anesthetists, and the enormous organization that you have, which represents only part of the nurse anesthetists that exist in this country, is evidence that some other people evidently agree with me.

Now, I do not want to take too much of your time, but I think I might just say one word more about the interesting change that has come over anesthesia in my particular field. From the time I started this work in 1909 until 1914, the anesthetic of choice was ether, given in various forms, but ether was the anesthetic that was universally used in cranial surgery.

From 1914 on until 1924 or 1926, influenced to a great extent by the work during the war, practically all cranial surgery was done under local anesthesia; we hardly ever, unless we were forced to, used a general anesthetic. Now, that did not mean—and this is, I think, a thing that needs emphasis—that did not mean that it dispensed with the anesthetist, because the job of the anesthetist in a cranial case is not confined to the giving of the anesthetic only, for the help of an anesthetist who knows how to watch the patient in these very long operations is invaluable. These operations often take a good many hours and during that time the observation of the patient and the blood pressure is of tremendous importance.

I would just like to digress for a moment. I was very much struck by the fact, this summer in England, that with the exception of two clinics in which both surgeons had been trained in this country, the anesthetists did not make use of blood pressure apparatus. In these two clinics—they had learned it over here—they used blood pressure apparatus.

About 1924 or 1926, many of us welcomed the opportunity of making a change. There is no question in my mind (and I look back to those years from 1914 to 1924 or 1926 with many regrets), that the trials and hardships of a patient being operated upon under local anesthesia, especially these long, tedious operations, are very great. We welcomed it,—I know I did—when a new anesthetic came into the field, which, at least here in my clinic, has completely replaced local anesthesia. Today, with the exception of an occasional case in which for some technical reason it is necessary to use local anesthesia, we do all our cases under avertin anesthesia.

Miss Lindsey, who has been with me for a good many years, has now given, I think, close to 1000 anesthetics under avertin and we find that the anesthetic is thoroughly satisfactory. It enables one to do things that we could not do before; certainly it removes all the fear and terror of the operating room, which many patients undoubtedly had when they were operated upon under local anesthesia, and it also removed this other dread, which is not at all uncommon, that patients who have been operated upon under local anesthesia would dread the possibility of a second operation. I have had patients say to me, over and over again, "I don't mind being operated upon the second time, if it is necessary, but can't I be put to sleep? Don't make me go through the local anesthetic." That discomfort and horror has been removed by the use of avertin. We have had practically no difficulty. I am not going into any details about it, but I feel that, when properly administered, it is the ideal anesthetic for cranial work. There are tricks about it, as those of you know who have used it.

I was much interested this summer when I was abroad to note that in one clinic they were using it, as I thought, extremely well, and were pleased with it; in another clinic they said they could not use it, and they did not understand how we could get along with it, because they could not keep the patients quiet. On inquiry, I found that the explanation was simple, they did not start it early enough, they moved the patients too much, they brought them to the operating room too soon, and those are all points which, in our experience, are essential in having a successful avertin anesthesia.

I want to say just one more word before I close, namely, that I think there is no question that in this country certainly (I cannot speak of other countries) the future of anesthesia lies absolutely in the hands of the nurse anesthetists, and the only warning, if I may be permitted to voice it, is, do not make the mistake that has been made in various surgical specialties and various other fields, of making a thing too complicated.

I appreciate being with you tonight and seeing what a large and wonderful organization you have. I wish you all kinds of success.

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GUEST SPEAKER AT BANQUET, TUESDAY, OCTOBER 1, 1935

MR. FRANK M. DEBATIN

Dean of University College, St. Louis, Mo.

Madam Chairman, I am in a very deep quandary this evening. Ever since I received the gracious invitation to come to speak here this evening, I have been in an increasing state of nervous anxiety. I have become almost a case for some of you to handle. And since I have been listening to Dr. Burlingham and Dr. Sachs, and realize with what glibness they are able to do that which I apparently cannot do, I am even more ashamed and more hesitant and more nervous to present myself before you as a college professor. I do not want to call you "ladies and gentlemen," I do not even want to call you "honored and distinguished guests in St. Louis," but under no circumstances can I say, "anesthetist nurse."

In fact, I am in even more of a quandry as I stand here before you. I am reminded a little of that introduction that once was given Mark Twain, when he was out in the southwestern part of the United States. He was introduced by a very tall, gaunt, lumbering individual, such as you have doubtless seen in the plains and mountains of Arizona and New Mexico, a man whose ability to make introductory speeches was perhaps not gained by his frequent experience in doing it, and who perhaps did not quite know what this was all going to be about anyhow, and he said: "Ladies and gentlemen, this speaker this evening, I don't know nuthin' much about him, except maybe two things: He ain't never been in jail and I don't know why he hasn't."

Speaking about the business of pronunciation, I am convinced in my own mind that a*dult* education is the correct way to pronounce it. I have heard it pronounced *ad*ult education, and I have heard it pronounced sometimes with such glibness and such superficiality that it sounded very much like "addlededucation," and I think when it was called "addled education" it very often was described properly.

I would like to take the time available—and I shall not be particularly long, I assure you—in giving you a little grammar lesson, and I want to give you a title for that grammar lesson, by saying that we are going to study the "auxiliary verbs." It has been a long time since some of us studied auxiliary verbs; perhaps some of us do not know what they are.

It makes me think of an experience I had a few years ago (I won't tell you what language I teach but I happen to be in the language field), when I was trying to make one of my recalcitrant students learn something about the parts of speech. I studied with him and battled with him for quite a little while. I went over nouns, prepositions, adverbs, verbs, and all that I could think of, and when about an hour's time had passed, I thought it might be a good pedagogical stunt to review what we had done. Nothing seemed to have happened in that hour, so far as I could see from the glint in the eye of that young man, and even when I once again told him what a noun was or a verb was and so on, nothing seemed to stir. But finally, as I got nearer the end of what I was saying, I said, "Then there are the prepositions." He said, "Oh, yes." And then, for the first time in my effort, I did see something that looked like the light of learning dawning in his face. "Oh, yes," he said, "the prepositions—those are the little words. I learned those in the cross word puzzle."

Auxiliary verbs are also little words and this is the story, briefly, of the "can," "will," "should," and "must," of adult education. It isn't so long ago that people had the very definite idea that up until you were twenty-five years of age, you could probably, under fortunate circumstances, learn something, but that once you had reached that twenty-fifth year, it would perhaps be better for you to devote your time to something else and not spend it in any vain efforts of learning.

Such eminent gentlemen as Dr. Thorndyke and others associated with him have experimented, in various ways, as some of you may know, to discover whether there was really truth in that. I do not know how much you believe in psychologists. I think they are wonderful people, even though sometimes they carry things to an extreme.

Dr. Thorndyke gathered together a number of people and subjected them to various tests. These were people of both sexes, varying ages, ranging up to perhaps forty-five or fifty or sixty years of age. First of all, he made sure that none of them knew how to typewrite, then he set them to work typewriting; he gave them a little bit of typewriting to do each day for a number of days, for a number of tests, and he timed the operation. He looked at the success of the work and, by keeping careful statistics, he made certain deductions as to the rapidity with which people could learn at different age levels.

Then he carefully examined his group to see whether there were any people who wrote with their left hands, and those people who wrote with their left hands he gave the task of learning how to write with their right hands; then the rest of them who wrote normally with their right hands, he gave the task of learning how to write with their left hands. Then again, by carefully compiling statistics, he put down certain numbers and so on.

As a third of the major operations he undertook, he subjected these people to learning how to write and speak Esperanto, a made language, something none of them had seen or heard before.

When he got through, he said: "From all the facts and figures I have before me, I am convinced that anybody can learn until he is forty-two years old."

Well, of course, that had two corollaries to it: First of all, it meant you could not take your nice new, unused, or slightly used brain, when you were somewhere around eighteen or nineteen, finished high school, or perhaps a little later when you finished college, put it up in the attic and lay it aside there and then expect, when you became forty-two years of age, to go up and look for it, reinsert it, and expect it to function as though it had been in constant use.

Of course, another thing that did not suit Dr. Thorndyke very much was the fact that he, himself, was over forty-two years of age and, therefore, he proceeded to go on with his operations and his tests and his deductions until, most recently, he has given us the verdict—he and his associates and others who have worked on this same problem—that the learning curve of the individual may start down after the forty-second year, but that it starts down at the rate of only one per cent a year, so that if that were to go on and no other interferences should come to change that curve in its downward track, you would have enough brain power to last you until you were about one hundred and forty-two years of age—probably enough for most of us.

Well, this has done away with old age; there is no more such thing as old age. Other things perhaps have contributed in removing our superstititions about old age, but all this certainly has given us courage and understanding and a good deal of inspiration in the matter of wanting to learn and making the effort to learn.

Now, of course, in these years, particularly in the last twenty or twenty-five years—increasingly so in the last few years—many organizations of all sorts have gone into this field of adult education. They have spread a very beautiful banquet—mental banquet—for people to partake of, and as they were doing it and as they were planning their various mental foods, the thought struck some of these people as to whether or not, after the banquet was spread, anybody would come and eat.

After all, the second of these little auxiliaries is quite as important in any fundamental understanding or program or plan of adult education, namely, the "will" of it.

I had a brief conversation, about two years ago, with a very distinguished lady, who happens to be associated in a high place in the present government, and I was very much surprised at her answer to my question, which I think perhaps she regarded as a bit foolish, if not superficial. I asked her whether she did not believe that with the coming of the new leisure—that was, incidentally, being talked of a little more two or three years ago than it is right now—we would have to do something in this country to stimulate people in wanting to learn. She threw up her hands in horror and amazement at anyone who would suggest that you would have to stimulate Americans to learn. But still trying to maintain such general characteristics as I possess and not wanting to be unfair or unpatriotic in my beliefs, I am still of the opinion that there are many people in this world—perhaps there be some of us here present—who, if they had a choice between reading a good book or a bridge game or a movie or a dance or something of that sort on the one hand, and attending a night class (I think I am one of them) would perhaps read a good book. Some of you would dance, some of you would go to the movie; occasionally I would go with you.

The point is that these folks whom you see round about you, to whom adult education ought to be something inspiring and stimulating, will not and cannot, of course, for various reasons, take up study, achieve something mentally and intellectually, unless there is a good objective and a good purpose. Of course, there are such purposes and objectives as a better job, getting a job, being better thought of by the people round about you, developing some hobby that you have, and possibly just being "in the swim," because everybody else is doing it. Now, those may not be very high objectives, they may not be the best stimuli in every case, but they are there and one is really rather grateful for them because, as I may be able to indicate to you directly, they have some bearing on what may be the future of this whole particular field of education.

Well, if you want any facts as to "Will adults learn?" perhaps just one little statement that was in this evening's paper would be appropriate. You know, the government has been establishing adult education classes all over the country, particularly in order to give employment to unemployed teachers, but also, of course, to foster educational ways and habits, and I noticed in the paper, tonight, that because of certain administrative difficulties, the adult education classes that were planned in Missouri have been somewhat indefinitely postponed, and that this would affect 60,000 people in the state of Missouri. That does not include what the University of Missouri is doing, what Washington University is doing, what St. Louis University is doing, what all the public schools, all the major cities are doing and what probably dozens of other agencies in this state, and of course similarly in all other states, are doing in this particular field; and they would not be doing it, I assure you, if there were not somebody who wanted it. Whatever we had at first, we certainly have a clientele now.

And now that question of, "What should adults learn?" It is not quite so disturbing as some of the others, but really you would be surprised if you could sit sometimes and see the people who come, interested and eager and enthusiastic, particularly at this time of the year, wanting to do something in an intellectual way. You might see a young fellow, maybe nineteen or twenty, stand at the corner of the desk and shuffle from one foot to another, one hand in his pocket, all nervous and fidgety, and then finally come out with a statement like this, "Ain't you got no courses in advertising?" Well, that is a problem, of course, for anyone who is interested.

There is the young man who comes and says, "I want to study electrical engineering," perhaps he is not even an eighth grade graduate, certainly not a high school graduate; he does not know whether he wants to wire houses or invent something beyond the radio; he does not know where his ambition is centralized.

When you see, as I see, both in the day time and the evening, young people with ambition and desire to go forward into something that is a real profession, something that will make them thoroughly useful for themselves and their community, and also see the limitations that they have, both social and economic and perhaps even intellectual, sometimes it makes your heart twist a bit. You realize that there isn't any better guide and direction as to what people in various phases of economic existence should undertake in the way of improving themselves. Surely you would not take everybody in every walk of life and treat them the same way.

Perhaps one of the biggest problems that confronts us in this field is to try to work out programs that shall be truly effective and not, as I said a little while ago, productive of this thing called "addleducation." It can be done.

Of course, when one comes to the fourth of these auxiliary verbs, as I called them, one realizes that he is on particularly dangerous ground. We Americans are not people who like the word "must;" we have not been brought up on it, we do not care for it; and we rather resent it. We resent the person who tells us there is any likelihood of it. But I challenge you to the belief or the thought, at least, that somewhere in our own lives and our own activities there are regions and realms that we cannot understand and that we cannot do much about until and unless we get some information about it.

You open the front page of the newspaper and, not so long ago, one of the big things was to know whether you were in favor of the gold standard or against it. Since that day, there have been all sorts of things. Today, you have to understand what Mussolini is trying to do down in Ethiopia and what his relationship is to the League of Nations and why Great Britain should come into this picture at all, not to mention the terrible names you will have to learn to pronounce if Mussolini ever does start fighting in Ethiopia, starting with the name of the king of that country and going on to the names of the various towns.

Over here in your own country, you have problems to solve. As citizens of your country, as voters of your country, you need to understand them and you need to appreciate them. And it is my conviction—and I do not share it alone, of course—I make it not as something I have thought about particularly but I make it as something I believe to be fundamental to the workability of a first grade, going democracy—

that our body politic, our citizenry must be highly informed, that it must be constantly reinforming itself, that it must be alive to the problems about which it, in the last analysis, must and shall make the decision, because it is really not hard to see that in a country in which the citizenry does not make its decisions, the results are such as we have noticed in other parts of the world. If this democracy of ours has merit, whatever the Constitution's value may be, whether it should be amended or not (that is another problem before you), it is necessary that you understand the background and the fundamentals of it, and not only you but those with whom you come in contact—your community, your associates.

If in this world you want to do two things in an educational way, that have significance and help and value, you can, first of all, start with yourselves and do whatever it may be that interests you, branch out in the very profession that you have, make it more significant and more valuable and make yourself more valuable in it. But if you can, at the same time, do a second thing; if some of you are where you can have influence upon younger people; if some of you have in your homes brothers and sisters or cousins or whatnot, or children of your own, who are in that period of early adolescence, there is one thing you can do for them though it is rather difficult to do: If you can make them—if you can *make* them voluntarily become interested in reading.

If there is one suggestion that I could give you or leave with you as a final word, it would be that he who has a reading habit, he who reads well, and he who can show later on that he has benefited by his reading, is one whose success in life is fairly well assured and whose future development and whose future value may be of rather great importance.

There have been many studies made on that. In the universities, we lay more stress, today, on what an incoming freshman does with his test in reading. A man named Joseph V. O'Connor, who has studied successful business men and business women the country over, has put forth a document that may not prove the whole case but that indicates that there is a relationship between success in reading—a vocabulary, if you will—on the one hand, and success in other things elsewhere.

Now, that was a lesson in grammar. A lesson in grammar is never anything very thrilling or very exciting, and yet it is fundamental, it reaches down into the very essence of the means of conversation and of living together.

I am truly proud and respect very much the cordiality of your invitation to come here. I am more than glad to see there are people here from many parts of the country. The things we are attempting to do here are not unusual, they are not particularly unique, but they do represent very definitely, I believe, those principles and those ideas that are widespread, those beliefs that we *can* learn, that we *will* learn, that we *should* learn, and if we are not careful, that perhaps some day we *must* learn.

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Hilda R. Salomon, President

At the annual business meeting of the National Association of Nurse Anesthetists the following officers were elected for the year 1935-36:

President—Hilda R. Salomon, Jewish Hospital, Philadelphia, Pa.

First Vice-President—Verna M. Rice, R.F.D. No. 1, Box 116, Mobile, Ala.

Second Vice-President—Olive L. Berger, Johns Hopkins Hospital, Baltimore, Md.

Third Vice-President—Eva M. Dickson, Brooklyn Hospital, Brooklyn, N. Y.

Treasurer — Gertrude L. Fife, University Hospitals, Cleveland, O.

Trustee — Helen Lamb, Barnes Hospital, St. Louis, Mo.

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STANDING COMMITTEES — 1935-36

Educational—Helen Lamb, *Chairman;* Olive Berger, Mae B. Cameron, Mabel Hard, Mary H. Muller.

Public Relations—Marian Robinson, *Chairman;* Lou E. Adams, Cora McKay, Myra B. Quarles, Anna Willenborg.

Publishing—Gertrude L. Fife, *Chairman;* Esther Meil, Florence Sargeant, Louise Schwarting, Gertrude Alexander Troster.

Revisions—Hattie Vickers, Theresa McTurk, Grace Williams.

Membership—Myrn Momeyer, *Chairman;* Marian Hollister, Marjory Walker.

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PRESIDENT'S REPORT

This is the third annual meeting of our organization. It is again time for the president to give a report of her stewardship. We have this past year carefully studied all phases of the organization and in each step we have proceeded cautiously. Our program has been constructive, and while aiming to correct certain evils, has emphasized the soundness of underlying principles which help to make this world a better place in which to live. Our philosophy of life has been one of action, and our prevailing standard one of service.

Largely through the efforts of the organization in the past two years, we have seen a trend towards better organized Schools of Anesthesia. The hospitals are becoming more conscious of the value of carefully trained anesthetists. The success of our program has largely been due to the cooperation and support given us by the hospital organizations.

Through the influence of the organization the number of anesthetists being graduated each year has been reduced. This has been accomplished in two ways. First, the courses in anesthesia have been lengthened; and second, the number of students admitted to the better schools has been limited to the number that the school can feel reasonably sure of placing in positions post-graduation. The lengthening of the course has sent into the field more experienced and better trained anesthetists. It has also helped to maintain and even increase in certain instances the remuneration of the anesthetist, in the face of the world's greatest reduction in earnings. We must in this connection weigh values, and as an organization we must strive to keep one step ahead of the over-production by increasing the requirements for entrance to the field. We shall have a happier, more wholesome group and we shall be free to devote our efforts to finer developments of more lasting value.

The Board of Trustees and the Educational Committee of the National Association have given a great deal of thought to the educational program. Without a doubt the greatest benefits to our group and to the profession as a whole will result from concerted action leading toward the establishment of greater uniformity of the Schools of Anesthesia. Primarily we are concerned with raising the educational standards. No agency is as potent as a well organized group within the profession, because it is an obvious fact that any professional group knows its needs better than any other group. In our case the nurse anesthetist has to a large extent been the educator. The initiation of the nurse as an anesthetist was an experiment, and the nurse herself is responsible for the continuance of the practice because she met the situation and justified the surgeon's faith in her ability. It therefore is the nurse anesthetist who must guide and influence the future education of the nurse entering this field.

Any endeavor of value, however, will meet with opposition from some sources. We have proceeded quite aware of the selfish interests and the destructive forces, as well as the friendly interests, prevailing during these last few years. We can hardly hope for the protection of the nurse anesthetists' education where in certain instances those educating the nurse anesthetist are now also serving on committees to abolish the nurse anesthetist from the field of anesthesia. It therefore behooves us to go forward with the program that is being given consideration by our own group. The Educational Committee has prepared a report setting forth the aims and purposes of the education of the nurse anesthetist, and a curriculum is to be recommended which if followed will accomplish these purposes and aims. I hope this report will be accepted and ready for publication directly after this meeting. If it is, we have taken one step forward in our educational program, and we shall have as a result a yardstick to measure the value of the existing schools, and a pattern that can be used to guide the various schools throughout the country.

During the past year four issues of the BULLETIN have been published. It is the first time the nurse anesthetist has been given an opportunity, and has been encouraged, to report her experiences. The magazine has helped to establish a spirit of friendship among our members, and has been the official organ of communication. The files at headquarters contain many letters from our members commenting on the educational value of this publication, and as one member stated, "The publication alone is worth my dues in the organization." Superintendents and surgeons throughout the country have written for copies, and many have asked to be placed on the permanent mailing list. Financially, through the cooperation of the commercial companies accepting advertising space, the magazine has not only met expenses—it has shown a profit. I hope that in the next year the value of this publication will be enhanced by more contributions from our members.

It has been encouraging to see the efforts put forth towards the organization of state groups. New York, Pennsylvania, Ohio, Alabama, Virginia, Minnesota, California and Missouri are well organized. Texas has two very active sectional groups, and Florida has just recently held an organization meeting. In Wisconsin, Connecticut, Massachusetts and Washington organization plans are being considered. The states have organized with a keen desire to further a program that will aid every anesthetist in this country. The absence of sectional feeling and selfish personal motives has placed these organizations on a sound basis, working in cooperation with the larger group, to lay the foundation of an organization that will in the future be a pride to each and every one of us.

The Public Relations Committee, the Revisions Committee and the Membership Committee have been untiring in their efforts this year, to do a good piece of work. Issues have been met fairly and squarely. The reports of these committees tell the story, and I personally consider it a privilege to have had the opportunity to work with these women.

Upon leaving the office of president I extend thanks to the Board of Trustees for the loyal support and cooperation given me. To the membership I extend grateful appreciation for the many letters of encouragement and the wholehearted assistance extended during many trying and discouraging times. I consider it an honor to have been the second president of this group. I now pass the torch on to another. Forgive me if I pass it on with sadness—wishing it were burning brighter. But the flame is still there. I am convinced after working with this body for two years that with future care we can build from this flame a beacon so strong, so bright—that its light will guide us to the fulfillment of our objective.

Respectfully submitted,
GERTRUDE L. FIFE

* * *

REPORT OF EXECUTIVE SECRETARY — 1934-35

To date 1122 applicants have been accepted as active members of the National Association and 75 as associate, making a total of 1197 applications passed upon by the Membership Committee.

During the year 319 notifications of acceptance were mailed to applicants who were accepted and approved by the Membership Committee.

All delinquent members were notified, and membership cards were mailed to all whose dues were received.

There have been four mailings of the NATIONAL BULLETIN, as follows:

Report of second annual meeting (November, 1934)
February, 1935
May, 1935
August, 1935

Programs for the third annual meeting were mailed to the membership, including railroad certificates covering special rates for the convention.

Application blanks were mailed in reply to inquiries totalling 549, including 305 to state organizations.

One meeting of the Board of Trustees was held: January 27th, 1935, at National headquarters.

Clerical help has been furnished from headquarters for the heavy correspondence of the Educational, Public Relations, Program, Nominating and Revisions Committees. The general correspondence has increased tremendously. Financial file cards have been prepared and sent to the newly organized state associations.

Respectfully submitted,
MARY LUCILE GOODMAN
Executive Secretary.

REPORT OF MEMBERSHIP COMMITTEE—1934-35

The Membership Committee held monthly meetings during the year with the exception of August, during which time all members were on vacation.

The committee approved 319 applications for membership—300 active and 19 associate. One application is still pending.

The present total of applications approved is 1197.

Respectfully submitted,
MYRN MOMEYER
Chairman.

FINANCIAL REPORT FOR THE YEAR ENDING SEPTEMBER 1, 1935

Cash on hand and in Bank September 1, 1934	$2,685.58
Receipts:	
Initiation Fees	312.00
Dues—National Association	2,146.25
State Association	1,267.50
Sale of Advertising Space in Bulletins	1,030.00
Sale of Pins	162.50
Interest Earned on Bank Deposits	54.52
Miscellaneous	7.00
	$4,979.77

Disbursements:	
Legal Fees	$1,097.52
Publishing Bulletins	1,004.34
Convention Expense	410.56
Refunds to State Associations	251.25
Stenographic Services	210.75
Pins Purchased	156.37
Postage	150.27
Telephone and Telegraph	136.42
Traveling	131.60
Printing and Stationery	79.38
Accounting Services	30.00
Books and Periodicals	17.88
Petty Cash Fund	10.00
Office Supplies and Miscellaneous	36.27
	$3,722.61
Cash on hand and in bank September 1, 1935	$3,942.74

Respectfully submitted,
Lou E. Adams
Treasurer

RESUME OF REPORT OF THE COMMITTEE ON PUBLIC RELATIONS

Agatha C. Hodgins, *Chairman*
Anna Willenborg
Marian L. Robinson

The work of the committee has this year been the immediate duty of meeting such legislative issues and legal questions as have arisen, through the offices of our legal counselor affording such assistance as the particular occasion demands. We are glad to report that each issue has been fairly met and we have been successful in retarding antagonistic efforts provoking them. A brief resume of these issues is given herewith:

New Hampshire

In January, 1935, through a nurse anesthetist (member of the Nurse Anesthetists Association) in New Hampshire, we learned of House Bill No. 196 proposed by Dr. Blood of Concord, N. H. We were originally informed that this bill was proposed, not with the idea of prohibiting nurse anesthetists, but rather to give protection against an unfortunate circumstance (having no connection with the anesthetists) which occurred in that state; the intent of the bill being simply to make it law that a third person be present when an anesthetic is being administered. We discovered however, that the language of the bill would, if adopted by the Legislature, absolutely prohibit the administration of anesthetics by nurse anesthetists.

After conferences between the committee and the Board of Trustees, it was decided to have our attorney take charge of the matter. Local counsel in New Hampshire was engaged to work with our counsel in the early stages of the matter, and when the bill finally reached the Senate, it was deemed advisable to have our counsel go to Concord, New Hampshire, and take personal charge of the matter. The method employed by our attorney was to make available to the Legislative Committees in charge of the bill in both Houses, complete information regarding the nurse anesthetists and the subject of anesthesia generally, insofar as it concerned the public, and these committees finally reported to their respective Houses that the proposed legislation was inexpedient. It is our counsel's opinion that no further disturbance is likely to occur in New Hampshire for some time.

CALIFORNIA

During the summer of 1934 action was brought by one Chalmers-Francis et al *vs.* Dagmar A. Nelson, a nurse anesthetist, and St. Vincent's Hospital, both of Los Angeles, California, to enjoin the latter from administering or permitting to be administered, anesthetics by nurse anesthetists. The case was argued in the Superior Court, August 1934, and the Court found in favor of the nurse anesthetist. The cause has since been appealed to the Supreme Court of the state of California and it is hoped that a decision affirming the lower court will be rendered in the near future. Your committee is informing itself as to the progress of this matter and will continue to follow the case.

INDIANA

In August, 1934, the Attorney General of Indiana, upon the request of the State Board of Medical Examiners, delivered an opinion as to the application of the Medical Practice Act with reference to the administration of anesthetics. The opinion concluded that no one except a regularly licensed physician or surgeon or dentist could administer anesthetics in the state of Indiana. This is regarded as indicative of more active antagonism to the nurse anesthetists, but at this time nothing definite has developed. The situation is being closely watched by the committee.

In the midst of controversy it is refreshing to turn aside and contemplate for a moment the heartening effect of public endorsement. On February 19th, 1935, the Board of Trustees of the American Hospital Association passed the following resolution:

> "Resolved that it is the judgment of the Trustees of the American Hospital Association that any legislation which bars or tends to bar the use of properly trained nurse anesthetists would be a mistake and a step backwards."

An important part of such a program is the study of legal means whereby national or state registration may be secured for nurse anesthetists. With this the Public Relations Committee is definitely concerned and should be mainly responsible for.

The work of the Educational Committee and that of this Committee are so closely allied that the interests of one will constantly touch the interests of the other. It will be essential therefore, that, for the success of both, most cordial and cooperative relationships shall be established between the two committees. It will be the office of this committee to reinforce the work of the educational, so that no fine effort made will be lost because of legal insecurity. The bringing about of sympathetic understanding regarding educational plans through the cultivation of helpful relations, will greatly enhance the value of this work.

Publicity Program

A well planned publicity program, an important factor to the success of any undertaking and an effective weapon against detrimental propaganda depends for its success upon coordination of interests, and cooperation in carrying out plans, between National and state associations.

There are broadly three media of publicity—publications, public meetings, and by individual contact, the particular application of which should be carefully studied to obtain desirable results.

The following suggestions are given more with the hope of provoking study of a better and more inclusive program than of establishing procedure.

Legislative Publicity

Such a program worked out between Public Relations Committee and Publicity Committee, should include: careful preparation of all legislative information, National and State, and endorsement of same by chairmen of committees before being released for publication.

Vigilant watch kept for all news releases regarding undesirable legislation in states and prompt reporting of same to National Headquarters. Headquarters should have in readiness such publicity material as will be helpful in combating the same, such as:

Folder containing

1—Code of Regulations
2—Questionnaire, giving pertinent facts regarding the National Association and the status and work of the nurse anesthetist.
3—Educational outline and curriculum.

State associations to have similar folder, including with such, information relative to the activities of each particular state.

Headquarters should have a list of key members in different states, together with their roster of nurse anesthetists, with addresses and telephone numbers.

To successfully carry out publicity by personal contacts, implies not only the arousing of professional consciousness in our members, but a conscientiousness on their part in studying means to make their efforts well directed and effective. In other words, information provided through publications must be assimilated and put into action by the members.

To facilitate working relations between National headquarters and different states, it is suggested that some practical plan be worked out in regard to:

First: Grouping certain states according to their geographical proximity, into larger divisions; Second: Enlarging the National Public Relations Committee and appointing from this central committee an advisory councillor to each division on matters concerning public relations, inclusive of legislation; Third: Correlation of work of advisory councillors by the Chairman of the National Committee and legal counselor, before submitting same to Board of Trustees for consideration and possible action.

Media for Public Expression

At the present time, practically the only medium for public expression, possessed by the National Association, is the National Bulletin, which has now passed the bulletin stage, and become, through some metamorphosis, an educational journal of no mean value. That its usefulness could be greatly increased by expansion into a National Journal of Anesthesia, will be admitted without argument. This is urged as the first step in providing a wider avenue for public expression.

That we should still further our cause, by the publication of papers in medical and hospital magazines, is a legitimate and well worthwhile plan. The newspaper publicity given to national and state conventions should be well thought out and carefully arranged—for in this way our organization is brought before the public eye. To make well planned publicity effective, it will be necessary for the committee concerned, to study carefully the established technique of placing material to be publicized, such as the preparation of news releases, value of clipping bureau, obtaining the good-will of newspaper syndicates and other legitimate and ethical means to bring the value of the work before the public, and make our aims articulate to other professional groups.

Relationships to Other Allied Professional Groups

The work of nurse anesthetists impinges closely upon surgery and hospital management; less closely upon nursing; but all such national groups are deeply engaged in the same problem of affording relief to the sick. That the work of the whole will be benefitted by raising the standard of service in any one of its divisions is an obvious truth. It is on these premises that the National Association desires to maintain helpful relations with allied medical groups. There can be no quarrel with our endeavor to contribute to the integral plan, our best efforts. We have for this purpose, a double incentive—as members of the nursing profession and as nurse anesthetists, committed to carrying out special and important hospital service.

With the American Hospital Association, our organization has established friendly and useful affiliation.

While no official connection exists between the American Nurses' Association and the National Association of Nurse Anesthetists, as such, we are affiliated, as members of the same profession, in the same ideals of service, and in common admiration for the great leaders of the nursing profession—women who not only had vision of the great destiny of nursing but by personal effort, imparting their wisdom to others, have made practical its fulfillment, in a service of inestimable and continuing value to humanity. While it is true that differences of opinion may exist among certain surgeons as to the value of this work (a not unusual attitude to pioneer effort) it is also a fact that this type of service is acceptable to the great majority. That they are our good friends has been amply proven. It will be the task of the National Association, through its educational publicity program and good work of its members, to prove to the doubtful ones, that given time, we shall yet convince them. Until then we are determinedly their good friends, anxious to cooperate in anything that makes for better service to the public.

THE VALUE OF ESTABLISHING HELPFUL RELATIONS WITH THE PUBLIC

Broadly speaking, the reason for the existence of any humanitarian group is public service, and if a professional group expects to take its place and continue to exist, it must prove its usefulness to community life. Remembering then that, "In the long run, the public is going to be served, in any particular field, by those who serve it best," we shall, as nurse anesthetists, endeavor to give always our best work.

The personal contact between members of the laity and the members of our professional group, who daily minister to their wants, affords our greatest opportunity. Consciously or unconsciously, with each such contact we register the community value of our work. The effect of a concerted effort to make the public feel our value, through friendly attitude and good work—might well make us pause and think of resultant benefits to our cause. It is the hope of this Committee that each member of our National Association will consider herself a committee of *one*, working for its welfare—a special *envoy* daily conveying its good will.

CONCLUSION

Public relationships may be likened to the warp of a fabric, that underlying, supporting structure upon which threads interwoven, form the design of the woven cloth. As on the strength of the warp depends the life of the fabric, so the permanence of the pattern created by the interwoven threads of our National activities will depend largely on the enduring, sustaining qualities of relationships we establish.

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REPORT OF EDUCATIONAL COMMITEE

HELEN LAMB, *Chairman*
OLIVE L. BERGER
MAE B. CAMERON
LAURA DAVIS DUNSTONE
MARY H. MULLER
AGATHA C. HODGINS, *Consultant*

It has been a real inspiration to the members of the Educational Committee to study the curricular outlines submitted to them by our members from the various Schools of Anesthesia.

It is the considered opinion of the committee that our prime need is not for some formula involving the use of a great group of new methods and subjects, but rather a coordination of those already in effect in the better schools, with a view to evolving a composite curriculum that may be regarded as a standard.

The Educational Committee is convinced that the work must start from some such acceptable standard of instruction and therefore devotes this report to the proposal of a composite curriculum based upon the courses at present successfully functioning, (and new independent study), which it recommends as a standard of instruction that should be met by all Schools of Anesthesia, whose graduates are to prove acceptable.

TYPE OF INSTITUTION

Schools of Anesthesia should be established in only those hospitals which have an active surgical division, embracing all types of surgical cases. The institution, to be suitable, should employ expert anesthetists who are qualified instructors; and should provide proper kinds and amounts of equipment and other facilities necessary for teaching this subject.

Obviously, unless the hospital management takes a genuine interest in the school, and is cognizant of the vital work of the anesthetist, there is little likelihood that the school could function in a truly satisfactory manner, with adequate teaching staff, suitable equipment, class rooms and other teaching facilities necessary for a well rounded course of instruction.

University Affiliations. When so located physically as to make it possible, the School of Anesthesia should strive to secure the benefits which Universities have extended to other professional groups. Such University recognition and affiliation should eventually result in broadened facilities, both practical and cultural.

ANESTHESIA DEPARTMENT PERSONNEL

Chief Anesthetist. The person who is to direct the actual training of the nurse anesthetist should have a personal, intimate understanding of the practical problems of this special type of training and students. Experience has proved that the most effective person for this office is the nurse anesthetist who has a special interest in teaching and in the broad future of the work. Naturally this chief anesthetist should have a sound educational background, and a vision for the future; to maintain standards which have already been established, and to develop new teaching policies and methods of instruction in step with ever changing times. She must be thoroughly familiar with and personally expert in the administration of anesthetics and fully qualified to teach the theory of her subject, as well as its practical administration. She should have had at least five years of continuous experience as an active anesthetist, and should have an inclination for study—constantly supplementing her knowledge by this means and by continuous observation.

Instructors Each assistant anesthetist on the staff should be selected with regard to both her knowledge of her subject and her ability to communicate this knowledge to, and work successfully with, students; and it is important that the staff be so selected and trained that it will unvaryingly correlate in practical administration with the students, the exact technique of administration which is established in the school. To facilitate this, weekly conferences of the instructors are recommended, for discussion of educational problems and to make certain of this unvarying coordination of technique.

Both theoretical and practical training can be delegated in its entirety to the nurse anesthetist, she having proved herself thoroughly capable in this field.

In the larger clinics, particularly in the University centers, it might be desirable to supplement this instruction by lectures in Physiology and Pharmacology by staff members of the Medical School.

Direction. Because of its relationship to surgery, the Department of Anesthesia should function directly under the Chief Surgeon; excepting that in hospitals where all of the professional departments are responsible to the Medical Director, the department of anesthesia would properly come under his direction. Only these exact heads of staff can be familiar with the actual problems of the service, and can therefore be in a position to properly direct it to the good of the service, the school and the students.

It is important however that the assignment of cases be made by the Chief Anesthetist, and not by the Resident in Surgery or the Surgical Supervisor.

EQUIPMENT

A School of Anesthesia engages to fit its students for skilled service in hospitals of whatever kind in whatever part of the country; which in view of the different kinds of anesthetizing equipment met with in various institutions, involves a broad instruction and experience with widely varied anesthetizing apparatus to provide adequate training in commonly-met-with manipulation and maintenance problems.

While in underlying principles anesthetizing machines are quite similar, yet their manipulating mechanisms vary so considerably one from another that it is highly essential that a school have a variety of machines available for student use and study, to familiarize her with the basic principles which underlie all the machines, and equip her to skillfully operate and maintain whatever types she may come in contact with in the field.

PERMANENT RECORDS

A complete system of permanent, uniform records of the student's progress during her course should be maintained, this record comprising grades obtained in the various subjects, hours of actual class room theoretical instruction, hours of "class period" practical instruction, hours of practical anesthesia and number of anesthetics administered during her course; together with information concerning her health, character and personality.

TECHNICAL LIBRARY

A School of Anesthesia should make available to its students a technical reference library, containing at least standard late edition text books on this exact subject. The following text books, periodicals and monographs are recommended—when available;—

Current Researches in Anesthesia & Analgesia
British Journal of Anesthesia
Journal American Medical Association
Gwathmey's "Anesthesia"
Hewitt's "Anesthetics and their Administration"
Flagg's "The Art of Anesthesia"
Cushny's "Pharmacology and Therapeutics"
Sollmann's "Manual of Pharmacology"
Haldane's "Respiration"
Henderson & Haggard's "Noxious Gases and Principles of Respiration"

Peters & Van Slyke's "Qualitative Clinical Chemistry"
Lunsgaard & Van Slyke's "Cyanosis"
Wiggers' "Modern Aspects of Circulation in Health and Disease"
Poe's "Modern General Anesthesia"
Blomfield's "Anesthetics in Practice and Theory"
Hewer's "Recent Advances in Anesthesia & Analgesia"
Levy's "Chloroform"
Hatfield's "Practical Anesthetics"
Ross & Fairlie's "Handbook of Anesthetics"
Peeble's "Graphic Anesthesia Chart"
Buxton's "Anesthetics"
Starling's "Principles of Human Physiology"
Howell's "Text Book of Physiology"
Wiggers' "Physiology in Health and Disease"
MacLeod's "Physiology and Biochemistry in Modern Science"

DURATION OF COURSE

Very important factors in this connection are not merely the calendar length of the course, but also the activity of the surgical service in the hospital housing the school, the amount and kind of material made available to the student during her course, and especially the type and amount of personal instruction that she receives during the training. Best opinion today is that under favorable circumstances of teaching, activity of surgical service and efficient school organization, the minimum time within which it is practical to fit the necessary instruction, subject matter and experience, is six months; and it is recommended therefore that six months be the minimum acceptable period, with a one year course advocated.

The general trend in all branches of scientific education is to lengthen the duration of courses, both in the interest of fuller training and of raising the standard by restricting entrants. From an economic standpoint (number of anesthetists in active practice and need of fullest experience and qualification of new workers in the field) it seems desirable to protect the future of the work by reducing the number of workers through raising the standards of all, and thereby automatically restricting the number of new entrants to the field. The general tendency is therefore toward lengthening the period of training.

REQUIREMENTS FOR ADMISSION

Particular emphasis should be laid upon candidates' qualifications for the work, before acceptance for enrollment in a course in anesthesia. It is not always possible to personally interview the applicant, and when it is, her suitability for the work cannot always be so easily determined. Therefore a study should be made of certain data regarding the applicant before admission to the course.

Education It is recommended that four years of high school prior to nursing course, be considered a minimum for acceptance. College entrance credits are advocated.

Only graduates of accredited Schools of Nursing, having passed required state board examinations, should be accepted.

Age Due to the character of the work involved, and the responsibilities devolving in practice, 24 years of age should be the minimum acceptable. A maximum age limit should be set at 35 years. While exceptions may develop, experience has shown the undesirability of admitting for training students beyond that age.

References Before a candidate is accepted for enrollment, references should be secured from the Superintendent of the Training School for Nurses from which she was graduated, including when possible a transscript of grades obtained during her training in nursing.

References should be also obtained from two physicians with whom the applicant has been associated, and who are acquainted with her physical condition and probable aptitude for the work.

A personal interview with the applicant is also desirable, when practical, and a photograph of prospective student should be secured.

Health Each student before actually beginning the course should be given a physical examination by a member of the hospital staff. It is recommended that this examination include specifically an X-ray of chest. Several positive findings in different schools during the past year amply justify this procedure.

LIMITED SIZE OF STUDENT BODY

The number of students admitted to the course in any school of anesthesia should be strictly limited to that number which by reason of the activity of the surgical service can have available to each student the full required number and kind of cases during her period of instruction. No student should be graduated who has not had a total of at least 275 cases during her course, (25 of these may be dental cases) and no school should accept students beyond the number that can be given at least the minimum number of suitable kinds of anesthetic cases during her regular period of training. In addition to the foregoing, student should administer at least twenty-five obstetrical anesthesias and analgesias. A recommended twenty-five additional cases may consist of spinal, sacral or local anesthesias. The foregoing totals 325 cases as a minimum.

UNIFORM TEACHING

A curriculum to carry measurable value must be rigidly adhered to, otherwise groups trained at different periods in the same institution would receive varied instruction. Definite provision in this regard is necessary when students or classes are started at various times during the school term. For instance, when the size of teaching staff and length of course in an institution is such that bi-monthly or tri-monthly starting classes cannot be avoided (to continuously have at hand a proper number of experienced anesthetists), the teaching should be so organized that each student unfailingly receives the full number of class room hours, and hours of practical instruction in specific "class period" subjects. This repetition of classes naturally puts an added strain on the teaching staff, but when all is said and done it is merely a matter of proper organization at the beginning and there should never be any compromise on this phase.

In practice, even with a properly organized course, it will at times become difficult to adhere strictly to full class room instruction in the announced subjects; but it is to be urged that such emergencies be met squarely and the necessary extra provision made, and no tendency permitted to supersede specific class room work by contracted compromise "lectures" in the operating room or during case administrations.

CLASS INSTRUCTION IN THEORY

The number of hours of teaching of theory outlined in any course, should represent actual hours of class room instruction, and should not include in it the hours utilized in discussion during administrations, or during duty in the operating room. It should represent what its title implies, "hours of definite instruction in the class room."

CLASS OPERATING ROOM INSTRUCTION

The number of hours of operating room instruction should represent actual class-period hours of instruction in the operating room on specific subjects (machines, equipment, records, department organization, et cetera) and should not include hours spent in routine conduct of the department, or spent in administration of cases.

PRACTICAL INSTRUCTION

The number of hours of practical instruction included in any course, will represent the remaining hours on duty in the Department for the duration of the course--observing, discussing with instructors and fellow students, studying cases, administering anesthetics, et cetera. Its length will vary proportionally with the length of the school course.

PATTERN OF TEACHING

Since the pharmacological effect of the different anesthetics is so different upon certain functions (ether versus chloroform on respiration or nitrous oxide versus avertin on blood pressure) and since therefore the pharmacology of each anesthetic is a specific rather than a general subject, it is recommended that the pharmacological effect of anesthetic agents be taught as a part of the description of each particular drug itself, rather than under a generalized heading.

To demonstrate the foregoing, and to serve as a basis for a uniform method of instruction, the following pattern of teaching in regard to each anesthetic agent is recommended—in this illustrative case the agent ETHER being used for the purpose;—

ETHER

(1) History of discovery, and its development as an anesthetic
(2) Simple chemistry, and physical characteristics
(3) Pharmacological effect upon the
    (a) Respiratory system
    (b) Circulatory system
    (c) Nervous system
    (d) Glandular system
    (e) Muscular system
(4) Specific objective symptoms (signs) identifying the stages of anesthesia under this agent
(5) Treatment of respiratory arrest, circulatory arrest and resuscitation under this agent
(6) Concentrations (partial pressures), absorption and elimination

(7) Methods of administration:
    (a) Open drop
    (b) Semi-open drop
    (c) Valvular mask
    (d) Oral insufflation
    (e) Nasopharyngeal insufflation
    (f) Oropharyngeal insufflation
    (g) Naso endotracheal insufflation
    (h) Oro endotracheal insufflation
    (i) Oro endopharyngeal inhalation
    (j) Oro endotracheal inhalation
    (k) Oil ether colonic
(8) Special techniques of administration for particular surgical cases (alone and in sequences)
(9) Indications and contraindications
(10) Written examination.

It is recommended that this detailed pattern of teaching be used for not only ether, nitrous oxide and ethylene, but also for the less commonly used chloroform (which at this time is still used routinely by leading surgeons for special types of surgery such as plastic with cautery, and ethyl chloride, which is still used in some dispensaries, office practice and homes for short procedures).

EXAMINATIONS

While difference of opinion exists as to the relative merit of "quiz periods" versus regular examination periods, it is the considered opinion of this committee that in addition to daily or weekly "quiz-conferences," definite *written* examinations on each subject taught are not only desirable but necessary to appraise a student's grasp or knowledge of that particular subject. Under this method a student is afforded opportunity for further instruction and study in those subjects which her examinations show to be necessary for her. It is recommended that these written examinations be held at the conclusion of the lectures on that individual subject or unit, and that the student's grades for these examinations be made a part of her permanent record. A final examination at the end of the course, reviewing the ground covered by the course, is also desirable.

DISCUSSION GROUPS

Discussion periods are valuable for advanced students; a senior student preparing a paper concerning her observations, or some anesthetic subject of her own choosing—the paper being discussed in conference with all the students and the instructors. Such discussion-conferences encourage development of powers of observation, self-expression, originality of thought and initiative. They should not, however, be permitted to take the place of definite scheduled class room and operating room instruction in specified subjects.

TIME OFF DUTY

This is a subject which merits careful consideration and provision. The best teaching is of little avail if a student comes to instruction after unusually long hours of duty under extreme physical, nervous and mental strain.

If after a student has spent an active morning in the operating room, followed by routine cleaning, she is hurried off to class instruction lasting one and two hours, she may from sheer weariness develop a growing dislike for study. It is recommended that class periods be so arranged that students may be given a rest period just prior to them.

While supplemental night duty for supervised students is in some cases necessary, experience has shown that if this night work be permitted to become very heavy, the student is not able to realize the full benefit of the instruction given her. There is grave question if any anesthetist can remain mentally or physically capable of good work, if her hours on duty average more than eight daily.

FIELD TRIPS

It is highly desirable that during her course, field trips to other hospitals be arranged for the student.

ORDER OF TEACHING SUBJECTS

The order of teaching curricular subjects will naturally vary with the institution, according to the anesthetic in major routine use. For instance, where ethylene combinations are the anesthetic of chief use, the teaching of ethylene would precede the teaching of nitrous oxide.

Quite in line with these minor rearrangements of subjects within the body of the course, it is recommended that subjects be taught in an order which will synchronize with the student's observed experiences—for instance, at the beginning of the course, "Objective symptoms" (signs of anesthesia) and the practical operation of the major anesthetizing machines in use, equipment, et cetera.

The curriculum which will now be recommended in this report has been arranged in a purposeful order, attempting to teach to the student at the beginning of her course those subjects which will be most necessary and useful in her earlier practical contacts in the operating room, passing then to subjects which become more readily assimilable in the light of increasing experience.

RECOMMENDED CURRICULUM

CLASSROOM INSTRUCTION

(1) Objective symptoms (signs of anesthesia)
    Color signs
    Muscular signs
    Eye signs
    Pulse signs
    Blood pressure signs
    Respiratory signs
(2) Pressure regulators, valve mechanisms, et cetera
(3) Manipulation of principal anesthetizing machines
(4) Computing percentages of gas mixture deliveries
(5) Positions for various operations; changes of posture; transference of unconscious patients; posture paralysis
(6) Physical management of patients
(7) Psychology in anesthesia
(8) Preoperative care

(9) Postoperative care
(10) Ether
(11) Nitrous oxide
(12) Oxygen—Asphyxia
(13) Oxygen therapy
(14) Carbon dioxide
(15) General anesthesia for children
(16) Anatomy of the lungs and physiology of respiration
(17) Mechanical respiratory obstruction; prevention, correction, pathology
(18) Anatomy of the circulatory system, and physiology of circulation
(19) Surgical shock
(20) Ethylene
(21) Obstetrical anesthesia and analgesia
(22) Preanesthetic medication and basal anesthetics
(23) Chloroform
(24) Ethyl chloride
(25) Newer anesthetics (Cyclopropane, Divinyl ether, Evipal, et cetera)
(26) Spinal anesthesia
(27) Local anesthesia
(28) Ethics in anesthesia and importance of specialized training
(29) History of anesthetic development
(30) Assigned readings (classroom periods)
(31) Major thesis

Supplementing the foregoing periods of class room teaching, it should be required that definite practical instruction in specific subjects be given in the operating room, on a "class period" schedule, entirely outside of routine operating room activities and exclusive of the time spent in observation, conduct of cases, et cetera. The following is recommended:—

OPERATING ROOM INSTRUCTION

(1) Introduction to operating rooms, clinics, departments of institution
(2) Demonstration of masks, airways, catheters and other accessories, with instruction in their care
(3) Instruction in mechanical manipulation of supplementary anesthetizing machines; gas inhalation (both standard and soda lime), ether insufflation, suction, et cetera
(4) Practical instruction in taking blood pressure
(5) Instruction in interpretation of patient's anesthetic chart and progress notes, indicative of patient's condition preanesthesia; charting pulse, blood pressure and respiration during anesthesia; routine transcription of institutional anesthetic records
(6) Instruction in regard to department supplies, equipment, et cetera.

It is recommended that at least 95 hours of definite class room teaching and 18 hours of specific-subject instruction in the operating room be given, making a total of 113 hours of unvaried organized teaching.

CONCLUDING THIS REPORT, it is recommended that:—

(1) A curriculum be endorsed for Schools of Anesthesia whose graduates are to merit highest rating by the National Association of Nurse Anesthetists.

(2) The curriculum propose specific material desired to be taught, a minimum number of acceptable recorded hours of organized teaching and a minimum acceptable number of anesthetics administered by each student graduated;

(3) These minima be:—

Length of course, 6 months (with one year advocated)
Recorded hours of class room instruction, 95
Recorded hours of operating room instruction, 18
Number of cases administered 325, (of which 25 should be obstetrical; 25 may be dental; 25 may be spinal, locals, et cetera).

* * *

REPORT OF REVISIONS COMMITTEE

Verna M. Rice, *Chairman;*
Grace M. Williams,
Theresa A. McTurk

The National Association of Nurse Anesthetists was incorporated under the laws of the State of Ohio as an organization not for profit, on March 12, 1932. A copy of the Articles of Incorporation may be obtained by writing to the Executive Secretary at National headquarters, 2073 Adelbert Road, Cleveland, Ohio.

The following Code of Regulations was submitted and adopted at the annual business meeting in St. Louis, October 2nd, 1935.

CODE OF REGULATIONS OF THE NATIONAL ASSOCIATION OF NURSE ANESTHETISTS

ARTICLE I
MEETINGS

Section 1. Annual Meeting:

The regular annual meeting of the members of the Association shall be held at the time and place designated by the American Hospital Association at its annual meeting, unless a majority of the members entitled to vote, of this association, shall agree upon another date and place for such annual meeting.

Section 2. Special Meeting:

Special meetings of the members may be held at any time, on call of the president or a majority of the Board of Trustees.

Section 3.

Notice of all meetings shall be mailed to each member appearing as such on the books of the Association, by the Executive Secretary, at least sixty days prior to the date of such meeting; and in all cases of special meetings, the notice therefor shall briefly state the object thereof.

Section 4. Quorum:

Twenty-five (25) members shall constitute a quorum for the transaction of business at any annual or special meeting of the members of the Association, provided at least five (5) states are represented by members entitled to vote.

ARTICLE II
TRUSTEES

Section 1. Election of Trustees:

The election of Trustees shall be held at the annual meeting of the members or at a special meeting called for that purpose. The election shall be by ballot and a majority of votes cast shall be necessary to a choice.

Section 2.

The number of Trustees shall be eight (8) and shall be selected as follows: The President, First Vice-President, and Treasurer of the Association shall be members of the Board of Trustees during their term of office and five (5) members of the Association shall be elected to membership on the Board of Trustees. One member of the first Board of Trustees shall be elected for one year, one for two years, one for three years, one for four years, and one for five years. Thereafter the Trustees, excepting those serving by reason of holding the office of President, First Vice-President, and Treasurer, shall be elected for terms of three years. The President shall be chairman of the Board of Trustees.

Section 3. Powers of Trustees:

The Board of Trustees shall have the control and management of the business, funds and property of the Association, subject only to the action of the members in meeting assembled. It may adopt by-laws not inconsistent with these regulations; promulgate and enforce rules governing the use of the property and funds of the Association and shall have such other powers with respect to the activities of the Association as may be conferred by the members by resolution enacted at any regular or special meeting and shall further have such other powers as are incidental and necessary to the carrying out of the foregoing powers; fill vacancies in its own membership, appoint a member of the Association to act as Executive Secretary for such term as they may see fit to designate and to remove said Executive Secretary for any reason sufficient to the Board and to adopt rules for the conduct of its own meetings and business; appoint standing or special committees of the Association and at will, change their personnel, and by by-laws, establish rules and procedure for the purpose of discipline.

Section 4.

The Board of Trustees shall hold its regular Annual Meeting immediately preceding the Annual Meeting of the members and at the same place as that of the Annual Meeting of the members. Special Meetings of the Board of Trustees may be called by the President at such times as the business of the Association may require. A quorum shall consist of not less than five (5) members of the Board of Trustees.

ARTICLE III
OFFICERS

Section 1.

The officers of this Association shall be President, First Vice-President, Second Vice-President, Third Vice-President, Executive Secretary, Treasurer, and Historian, and, with the exception of the Executive Secretary and Historian, shall be elected for terms of one (1) year each, at the regular Annual Meeting of the members of the Association. The officers shall be eligible for two consecutive terms except the Historian who may be a candidate to succeed herself without restriction as to the number of terms for which she may be eligible to hold office.

Section 2.

The Executive Secretary shall be appointed by the Board of Trustees and shall hold office at the pleasure of the Board. The Executive Secretary will act as Secretary to the Board of Trustees but will not be a member of said Board, nor shall she be entitled to vote at the meetings of the Board.

Section 3.

The officers, with the exception of the Executive Secretary, shall be elected by ballot at each Annual Meeting and a majority of the votes cast shall be necessary to a choice.

ARTICLE IV

DUTIES OF OFFICERS

Section 1. President.

The President shall preside at all meetings of members and Board of Trustees, sign all certificates of membership and perform generally, all duties usually incident to such office, and such other and further duties as may be, from time to time, required of her by the members of the Board of Trustees. The President shall also prepare and read at each Annual Meeting of the Association and at the regular Annual Meeting of the Board of Trustees, a condensed narrative report of the work of the year.

Section 2. The Vice-President.

The Vice-Presidents, according to rank, shall perform all of the duties of the President, in the event of the latter's absence, disability, resignation, removal from office or death.

Section 3. The Executive Secretary.

The Executive Secretary shall keep in permanent form, the minutes of the regular Annual Meetings of the members and any Special Meetings of the members and of all of the Meetings of the Board of Trustees. She shall give all notices required by law and all notices provided by the Code of Regulations or By-Laws of the Association. She shall keep an alphabetical list of members, the personnel of committees, issue and attest certificates of membership, compile a report of her office and present same at the Annual Meeting of the members and of the Board of Trustees and generally perform such duties as may be required of her by the members and Trustees. At the termination of her term of office she shall deliver all books, papers and property of the Association, in her hands, to the President or to her successor.

Section 4. Treasurer.

The Treasurer shall receive all moneys of the Association, pay all bills and disburse funds as directed by the Board of Trustees, keep the Executive Secretary informed regarding the delinquent members, deposit funds in a bank designated by the Board of Trustees and report regularly, concerning the condition of the Treasury, to the Board at each Annual Meeting. She shall give bond subject to the approval of the Board of Trustees and her books, vouchers and annual report shall be audited annually by certified public accountants. She shall perform all such other and further duties as may be required of her by the President or Board of Trustees. At the expiration of her term of office she shall deliver all moneys, property and rights of the Association in her hands, to her successor in office, or to the President.

Section 5. Historian.

The Historian shall present at the Annual Meeting of the members of the Association, a written history of the current year which will include such interesting events in the life of the Association and its members as will contribute to the historical background of the National Association; such record to be in duplicate, one copy to be placed in a loose-leaf history record book and passed on to her successor and the other to be kept in the archives of the Association.

ARTICLE V

COMMITTEES

Section 1. Committees:

Generally there shall be seven (7) standing committees, composed of not less than three (3) members each, as follows: Membership, Program, Public Relations, Revisions, Education, Publication and Finance.

Section 2.

The Committee on Membership shall investigate the eligibility of all applicants for membership and shall report to the Board of Trustees, whose decision shall be final.

Section 3.

The Program Committee shall, in conference with the President, prepare a complete program for the Annual Convention with the approval of the Board of Trustees.

Section 4.

The Committee on Public Relations shall study the existing laws of the various states, dealing with Anesthesiology and shall, at all proper times, report and make recommendations to the Board of Trustees, regarding such laws. This Committee shall also study the conditions affecting Anesthetists generally and shall make recommendations to the Board of Trustees for the protection of the professional rights of the members of the Association and the public. This Committee shall also assist in the establishment of a Committee on Public Relations in each state or sectional association and shall further perform such other duties as may be designated from time to time by the Board of Trustees, and shall have advisory responsibility on educational problems involving legislation.

Section 5.

The Committee on Revisions shall present all proposed amendments to the Code of Regulations to the Board of Trustees for consideration and with the approval of the Board of Trustees submit such amendments to the Annual Convention for action.

Section 6.

The Committee on Education shall assist in the development of educational standards, establish and maintain a central bureau of information, compile and have on record a list of recognized schools of anesthesia and qualified instructors and to be responsible for the carrying out of such other educational projects as may be authorized by the Board of Trustees. This Committee shall have advisory responsibility on all educational problems except those involving legislation.

Section 7.

The Committee on Publications shall cause to be published, subject to the approval of the Board of Trustees, such periodicals, bulletins and other publicity material, as will assist in the general purpose of the organization. This committee may be enlarged at the discretion of the Board of Trustees, upon proper presentation to said Board, that such will facilitate the work of the Committee, and contribute to the interest of the Association.

No paper shall be published in the minutes or in any magazine or paper as a part of the transactions of this Association except with the approval of the Board of Trustees.

All papers read at any session of the Association or its State or Sectional Associations shall become the property of the Association, and when so requested, the Board of Trustees may cause the same to be copyrighted in the name of the Board of Trustees; but unless prohibited by the Board of Trustees the authors of all papers read at sessions of the Association or its State or Sectional Associations may cause the same to be published, and if approved by the Board of Trustees, they may be published as a part of the transactions of the Association. No paper or magazine shall be entitled to the exclusive publication of any paper read before the Association or its sessions except by vote of the Board of Trustees.

Section 8.

The Committee on Finance shall advise as to the expenditure of funds, prepare a budget of expense for each year and report same and all other matters of Finance to the Board of Trustees.

The Treasurer shall, by virtue of her office, serve as member of the Finance Committee.

ARTICLE VI

MEMBERSHIP

Section 1.

The membership of the Association shall be by State or Sectional Association and Individual.

Section 2. State or Sectional Division:

A. Any association of Nurse Anesthetists, formed in any state of the United States or any Sectional Association composed of members who are Nurse

Anesthetists in two or more states, may become affiliated with the National Association of Nurse Anesthetists in the State or Sectional Association Division, provided:

1. That the requirements and standards for individual membership in the State or Sectional Association correspond to the requirements and standards for individual membership in the National Association, in all respects.

2. That the State or Sectional Association agrees to accept without reservation, the requirements of the Code of Regulations and By-Laws of the National Association of Nurse Anesthetists and cooperate fully with the National Association of Nurse Anesthetists, in the purpose for which it was formed.

3. That the State or Sectional Association pay into the Treasury of the National Association of Nurse Anesthetists, an initiation fee of One Dollar ($1.00) and annual dues in the amount of Two Dollars and Fifty Cents ($2.50) for each individual member appearing on its rolls during the time that such State or Sectional Association is affiliated as a member of the National Association of Nurse Anesthetists.

B. Every individual member of a State or Sectional Association which has become affiliated as a member with the National Association of Nurse Anesthetists, shall be, by virtue of her membership in said State or Sectional Association, an individual member of the National Association of Nurse Anesthetists and shall be entitled to all the rights and benefits of any other individual member of the National Association of Nurse Anesthetists subject to the same qualifications and restrictions which apply to all individual members.

C. Any state or sectional association desiring to become affiliated in the state or sectional division of this association, shall make application on the form approved by the Board of Trustees and furnished to such applicant by the Executive Secretary. Such application shall be submitted by applicant provided the application is executed pursuant to the affirmative vote of a majority of the members entitled to vote in such state or sectional association at a meeting called for such purpose.

D. In no event shall the National Association of Nurse Anesthetists be liable for debts or obligations of any kind whatsoever, incurred by any state or sectional association which may be affiliated with the National Association except, such obligations as may be expressly entered into and authorized by the Board of Trustees of the National Association.

Section 3. Individual Division:

A. Applications: Applications for Individual membership shall be in writing, addressed to the Executive Secretary and shall be endorsed by two (2) members of the Association. Such application shall be referred by the Secretary to the Committee on Membership for examination and report. The candidate shall be notified of the action on her application, by the Executive Secretary.

B. Individual members, qualifying as Active, residing in states where no affiliated state association of nurse anesthetists exists, shall pay direct to National Headquarters, one dollar ($1.00) initiation fee and five dollars ($5.00) annual dues until such time as the state they reside in is organized and affiliated with the National Association, when transfer of membership will be arranged to their particular state association.

C. Classifications: The individual membership of this Association shall include four (4) classes:—Active, Associate, Honorary, and Sustaining. Any person to be admitted to individual membership in the Association shall qualify as provided in the Articles of Incorporation. Active members only, shall have the right to vote.

D. To qualify for Active membership, an applicant shall have been graduated from an accredited school of nursing and have passed the required State Board examination for nurses and actively continued her registration if so required by the State in which she is registered and have engaged for not less than three years in the practice of the administration of anesthetic drugs prior to 1936 and must be so engaged at the time of applying for Individual membership. Any candidate for Individual membership who has not been engaged in the practice of the administration of anesthetic drugs for at least three years prior to 1936, but who has been graduated from a recognized school of anesthesia, shall be eligible for membership.

E. Any person not qualified for Active membership, but who is interested in the aims of the Association and the development of Anesthesiology in hospitals, special clinics, dispensaries or distinctly medical institutions, is eligible to associate membership.

F. Persons rendering distinguished service in or valuable assistance to Anesthesiology, are eligible to Honorary membership upon recommendation of the Board of Trustees and by two-thirds vote of the Active members present and voting at any Annual Meeting. Honorary membership shall be limited to five (5) members. Members receiving this honor shall be exempt from the payment of annual dues, but shall not be deprived, as previous Active members, of the right to vote or hold office.

G. A gift to the Association of not less than One Hundred Dollars ($100.00) shall entitle the donor to Sustaining membership.

Donors, though not entitled to vote, shall be welcome at all meetings of the Association and their names shall be perpetually recorded and published in the Annual proceedings—and they shall receive a copy thereof.

ARTICLE VII
NOMINATIONS AND ELECTIONS

Section 1.

All Active members present at the regular Annual Meeting, shall be entitled to vote at all elections of officers and trustees.

Section 2.

All elections shall be by ballot and the majority of the votes cast shall be necessary to a choice.

Section 3.

The Board of Trustees shall appoint, at least Ninety (90) days prior to each regular Annual Meeting, a Special Committee of not less than three (3) members nor more than five (5) members whose duty it shall be to meet not less than sixty (60) days prior to such election and nominate one candidate for each office and vacancy on the Board of Trustees. Nothing herein shall prevent any Active member present at such regular Annual Meeting from placing in nomination the name of any member as a candidate for any office or vacancy on the Board of Trustees who is eligible to hold office or trusteeship.

Section 4.

No member shall hold office in a State or Sectional Association at the same time as holding an office in the National Association.

ARTICLE VIII
FINANCE

Section 1.

All initiation fees and dues shall be payable in advance.

Section 2.

The initiation fee shall be $1.00.

Section 3.

The annual dues of active members shall be $5.00.

Section 4.

The annual dues of associate members shall be $2.50.

Section 5.

Any Active or Associate member may become a Life member on the payment of $100.00.

Section 6.

Any members whose dues are not paid by May 1st, shall forfeit their membership and such forfeited membership may be reinstated only upon payment of dues accruing at the time of the suspension and for the current year and with the approval of a majority of the Trustees.

Section 7.

All memberships shall commence on January 1st, and expire on December 31st.

ARTICLE IX

If the conduct of any member shall appear to be in willful violation of the Code of Regulations or articles of Incorporation of this Association, or prejudicial to the Association's interests, the Board of Trustees may, by the affirmative vote of four-fifths ($\frac{4}{5}$) of the entire Board, suspend or expel such member. Before taking such action, also a written copy of the charges must be served upon the member and an opportunity given to be heard before the Board of Trustees in defense. A motion to reconsider the suspension or expulsion of a member may be made at the next regular meeting of the Board of Trustees, but not thereafter.

ARTICLE X

Parliamentary Authority—"Roberts' Rules of Order" shall be the authority for this Association.

ARTICLE XI

AMENDMENTS

This Code of Regulations may be amended, modified or abolished at any Annual Convention Meeting by a two-thirds vote of those present and qualified to vote, provided notice of the proposed amendment, modifications or resolution for abolishment has been placed in the hands of the Executive Secretary two months prior to the Annual Meeting. Any such proposal to amend, abolish or modify shall be appended to the notice of the Annual Meeting of the Convention.

* * *

COMING MEETINGS

NEW YORK

The third annual meeting of the New York State Association of Nurse Anesthetists will be held in Buffalo, N. Y., May 21st and 22nd, 1936, in conjunction with the New York State Hospital Association. Headquarters at the Hotel Statler. For further information write Miss Cora McKay, President, Albany Hospital, Albany, N. Y., or Miss Hazel Blanchard, Secretary-Treasurer, 1910 Seventh Avenue, Troy, N. Y.

OHIO

The third annual meeting of the Ohio State Association of Nurse Anesthetists will be held in Columbus, April 14-16, 1936, in conjunction with the Ohio State Hospital Association. Headquarters at the Deshler-Wallick Hotel. For further information write Miss Lucy Richards, President, Huron Road Hospital, Cleveland, Ohio; or Miss Marian Hollister, Secretary-Treasurer, 2038 Cornell Road, Cleveland, Ohio.

PENNSYLVANIA

The fifth annual meeting of the Pennsylvania State Association of Nurse Anesthetists will be held April 22nd to 24th, 1936, at the William Penn Hotel, Pittsburgh, in conjunction with the Pennsylvania Hospital Association. Program Committee, Miss Leola Richter, Chairman; Gertrude Render and Mary Roenbaugh. For further information communicate with Miss Marian L. Robinson, President, Pennsylvania Hospital, Philadelphia, or Miss Rose G. Donovan, Secretary-Treasurer, Mount Sinai Hospital, Philadelphia.

CALIFORNIA

The first meeting in the new year will be held January 7th, 1936, at San Francisco General Hospital, following which meetings will be held the second Tuesday of every other month—March, May, August, et cetera.

The California Association of Nurse Anesthetists, since their reorganization in March, 1935, have held bi-monthly meetings as follows: May 7th at Providence Hospital, Oakland; August 6th, Mary's Help Hospital, San Francisco, and October 16th, St. Mary's Hospital, San Francisco.

TEXAS ORGANIZES

A meeting was called on December 11th, 1935, at the Methodist Hospital, Fort Worth, Texas, for the purpose of organizing the nurse anesthetists in that state. Eighteen members were present, and the following officers were elected for the year 1936: President, Dorothy M. Hoadley, Methodist Hospital, Fort Worth, Texas; Vice-President, Lucille Mullen, Parkland Hospital, Dallas, Texas; Secretary-Treasurer, Ora Lee Mercer, 514 Medical Arts Bldg., Fort Worth, Texas.

The Fort Worth, Texas, District Association of Nurse Anesthetists have resumed their monthly meetings for the year, and the following officers were elected for the year 1935-36: President, Miss Minnie V. Haas, Methodist Hospital, Fort Worth, Texas; Secretary, Miss Allie Mae Campbell, Cook Memorial Hospital, Fort Worth, Texas.

VIRGINIA ASSOCIATION OF NURSE ANESTHETISTS HOLDS ANNUAL MEETING

The Virginia Association of Nurse Anesthetists held a meeting November 16th, 1935, at the Hotel Richmond, Richmond, Virginia. A revised Constitution and By-Laws was submitted to the membership and unanimously adopted.

A resolution was introduced whereby it was proposed that the Virginia Association of Nurse Anesthetists make application for membership in the State Division of the National Association of Nurse Anesthetists. The resolution carried unanimously.

The following officers were elected for the year 1935-36:

President: Miss Vera G. Copeland, St. Elizabeth's Hospital, Richmond, Va.; Vice-President: Mrs. Minnie Freese Payne, University of Virginia Hospital, University, Va.; Secretary-Treasurer: Mrs. Edna Nesbit Beal, Cabaniss Hall, Richmond, Va.; Trustees: Miss Anna Weick, U. S. Marine Hospital, Norfolk, Va.; Miss Lorene Lisle, Stuart Circle Hospital, Richmond, Va.; Miss Georgia C. Scott, Lewis-Gale Hospital, Roanoke, Va.

A meeting of the Board of Trustees of the Virginia State Association will be held the early part of 1936.

OREGON NURSE ANESTHETISTS ORGANIZE

A recent meeting of nurse anesthetists was held in Oregon to organize a State Association of Nurse Anesthetists. At this meeting the

Oregon anesthetists voted to become affiliated as a State Division with the National Association of Nurse Anesthetists. For further information relative to this organization communicate with Miss Aimee L. Doerr, President, Multnomah Hospital, Portland, Ore.

MINNESOTA NURSE ANESTHETISTS ASSOCIATION HOLDS MONTHLY MEETINGS

Monthly meetings of the Minnesota Association are held alternately in various hospitals in Minneapolis and Saint Paul. The anesthetists in the institution where the meeting is to be held arrange the program and the Chief Anesthetist acts as chairman for the evening. The meetings have been well attended and the programs arranged have been interesting and instructive.

The annual meeting of the Association will be held in January, at which time officers for the coming year will be elected. For further information relative to these meetings communicate with Miss Ruth Bergman, President, Mounds Park Hospital, Saint Paul, Minn.; or Miss Mina Sponheim, Secretary, Northwestern Hospital, Minneapolis, Minn.

LIST OF REGISTRANTS

October 1, 1935 St. Louis, Mo.

Adams, Lou E.	Cleveland Clinic Hospital	Cleveland, O.
Albers, Meta	Washington Univ. School of Dentistry	St. Louis, Mo.
Ammentorp, Magna	Deaconess Hospital	Grand Fork, N. D.
Anderson, Marie S.	Immanuel Hospital	Omaha, Nebr.
Anderson, Palma	Deaconess Hospital	Minneapolis, Minn.
Beck, Osa	San Angelo Medical & Surgical Clinic	San Angelo, Tex.
Bennett, Dolly	416 S. Kingshighway	St. Louis, Mo.
Berger, Olive L.	Johns Hopkins Hospital	Baltimore, Md.
Berry, Josephine	1140 W. Decatur St.	Decatur, Ill.
Beyer, Florence Keffeler	St. Louis County Hospital	St. Louis, Mo.
Bloom, Estelle	822 Heyburn Bldg.	Louisville, Ky.
Bolton, Gladys M.	City Hospital	Akron, O.
Brown, Mrs. Walter L.		Chicago, Ill.
Burnett, Anna	Victory Memorial Hospital	Waukegan, Ill.
Cameron, Catherine	St. Joseph Hospital	Milwaukee, Wis.
Cameron, Mae B.	Ravenswood Hospital	Chicago, Ill.
Carico, Pauline	County Hospital	Urbana, Ill.
Cole, Sylvia C.	Jewish Hospital	St. Louis, Mo.
Cook, Josephine G.	Davis Hospital	Pine Bluff, Ark.
Copeland, Vera	St. Elizabeth's Hospital	Richmond, Va.
Cox, Ann	Missouri Baptist Hospital	St. Louis, Mo.
Craven, Helen K.	Osborn Hall, 426 E. 26th St.	New York, N. Y.
Derrick, Ora L.	James Walker Memorial Hospital	Wilmington, N. C.
Diefenderfer, Dixie Lee	Christian Hospital	St. Louis, Mo.
Donovan, Mary	Milwaukee County Hospital	Milwaukee, Wis.
Donovan, Rose G.	Mt. Sinai Hospital	Philadelphia, Pa.
Donnan, Jane	1430 Marion St.	Columbia, S. C.

Edwards, Dorothy M.	Methodist Hospital	Des Moines, Iowa
Efinger, Irene	Barnes Hospital	St. Louis, Mo.
Emerick, Ida M.	Rochester General Hospital	Rochester, Pa.
Estes, Mary Laird	Children's Hospital	Chattanooga, Tenn.
Ewer, Bertha A. L.		Sioux City, Iowa
Falk, Florence C.		Sioux City, Iowa
Fife, Gertrude L.	University Hospitals	Cleveland, O.
Fink, Jewelle C.	1418 Madison	Memphis, Tenn.
Fleming, Maude M.		Middleburg, N. C.
Forges, Nancy F.	Memorial Hospital	Lynchburg, Va.
Fossum, Alma	Mt. Sinai Hospital	Chicago, Ill.
Foster, Anne Blanche	Citizens Gen'l Hospital	New Kensington, Pa.
Foust, Alma Clyde	Colbert County Hospital	Sheffield, Ala.
Frein, Cecilia	St. John's Hospital	St. Louis, Mo.
Gay, Reva	Methodist Hospital	Dallas, Tex.
Gentle, Marjorie	Wilmington General Hospital	Wilmington, Del.
Gettinger, Anna L.	St. Louis City Hospital	St. Louis, Mo.
Gettinger, Rose H.	St. Mary's Hospital	St. Louis, Mo.
Glenn, Tommie P.	Deaconess Hospital	St. Louis, Mo.
Grillet, Agnes	628 Fern St.	New Orleans, La.
Hain, Agnes C.	Clarkson Memorial Hospital	Omaha, Nebr.
Hale, Dessa C.	Dr. Kelley Hale Hospital	Wilmington, Ohio
Hamel, Lessie Ammonette	46 Jefferson Road	St. Louis, Mo.
Hardman, Grace	St. Anne's Hospital	Chicago, Ill.
Hard, Mabel D.	Jackson Park Hospital	Chicago, Ill.
Hibbetts, Jeannette	De Paul Hospital	Naples, Tex.
Hoadley, Dorothy M.	Methodist Hospital	Fort Worth, Texas
Hobson, Archie D.	Fort Sanders Hospital	Knoxville, Tenn.
Hodgins, Agatha		Chatham, Mass.
Hoffman, Mary L.	De Paul Hospital	St. Louis, Mo.
Hogan, Helen E.	Barnes Hospital	St. Louis, Mo.
Homley, Frances		Rockwood, Tenn.
Homey, Clotie	Fort Sanders Hospital	Knoxville, Tenn.
Houck, Edna I.	Philipsburg State Hospital	Philipsburg, Pa.
Hunt, Valeda V.	Methodist Hospital	Peoria, Ill.
Hutchinson, Doris I.	Manchester Memorial Hospital	Manchester, Conn.
Jacob, Martha	Barnes Hospital	St. Louis, Mo.
Jekel, Louise	St. John's Hospital	Maplewood, Mo.
Johnson, Lavida Ward	Bridgeport Hospital	Bridgeport, Conn.
Kaiser, Emilie	University Hospital	Columbus, O.
Kauffman, A. Isabelle	Elyria Memorial Hospital	Elyria, O.
Kemp, Ada	Jennie Edmundson Hospital	Council Bluffs, Iowa
Kirven, Sarah	Torbell Sanatorium	Marlin, Tex.
Koehler, Emma M.	Robert Koch Hospital	Koch, Mo.
Koenig, Mary E.	Charity Hospital	New Orleans, La.
Kraus, Paula	St. Vincent's Infant and Maternity Hospital	Chicago, Ill.
Krekeler, Irene Frances	523 - B - 42nd St.	Oakland, Calif.
Lamb, Helen	Barnes Hospital	St. Louis, Mo.
Lane, Maud	Englewood Hospital	Chicago, Ill.
Laughlin, Rose	Mt. Sinai Hospital	Milwaukee, Wis.
Lebkuecher, Ethel M.	Decatur & Macon Co. Hospital	Decatur, Ill.
Lenihan, Julia	Frances Willard Hospital	Chicago, Ill.
Little, Alice	Methodist Hospital	Memphis, Tenn.
Litzen, Catherine	W. Frankfort Union Hospital	West Frankfort, Ill.
Lyngstad, Charlotte	Swain & Ramstad Clinic	Bismarck, N. Dak.
McKay, Cora	Albany Hospital	Albany, N. Y.
McKean, Bertha	Passavant Hospital	Pittsburgh, Pa.
McTurk, Theresa A.	Metropolitan Hospital	Philadelphia, Pa.
Maire, Frances H.	Clinton Memorial Hospital	St. Johns, Mich.
Marberry, Eunice	Trinity Hospital	Little Rock, Ark.
Marcum, Edith	Jewish Hospital	St. Louis, Mo.

Marsh, Margaret	Woodlawn Hospital	Chicago, Ill.
Meil, Esther	Henry Ford Hospital	Detroit, Mich.
Mercer, Ora Lee	c-o Dr. R. L. Grogan	Fort Worth, Tex.
Michel, Dorothy	St. Elizabeth Hospital	Granite City, Ill.
Miller, Ella M.	Letterman Gen'l Hospital	San Francisco, Cal.
Miller, Zella C.	Jameson Mem'l Hospital	New Castle, Pa.
Muller, Mary H.	Duke University Hospital	Durham, N. C.
Mulvane, Lucile	L. D. S. Hospital	Salt Lake City, Utah
Myers, Margaret	Danbury Hospital	Danbury, Conn.
Nash, Ruth M.	Muhlenberg Hospital	Plainfield, N. J.
Newman, Beatrice M.	St. Luke's Hospital	St. Louis, Mo.
O'Day, Exire	Ravenswood Hospital	Chicago, Ill.
Olson, Anna M.	Grant Hospital	Chicago, Ill.
O'Malley, Mary	25 E. Washington St.	Chicago, Ill.
Paine, Louise	Parkview Hospital	Pueblo, Colo.
Perry, Mae A.	Goodrich Gen'l Hospital	Goodrich, Mich.
Pettigrew, Sara N.	Sterling Public Hospital	Sterling, Ill.
Pfiefer, Christine K.	Children's Hospital	Columbus, O.
Pippereit, Martha A.	Chicago Memorial Hospital	Chicago, Ill.
Priester, Ann	West Suburban Hospital	Oak Park, Ill.
Quarles, Myra Belle	Children's Hospital	Oakland, Calif.
Reitz, Helen	Barnes Hospital	St. Louis, Mo.
Rhodes, Lois L.	Barnes Hospital	St. Louis, Mo.
Rice, Verna M.	R.F.D. No. 1, Box 116	Mobile, Ala.
Richardson, Kathleen	4915 West Pine	St. Louis, Mo.
Rinella, Edris	416 S. Kingshighway	St. Louis, Mo.
Roadman, Bernice	St. Luke's Hospital	Saginaw, Mich.
Robinson, Marian L.	Pennsylvania Hospital	Philadelphia, Pa.
Ruddy, Doris M.	Ashton Mem'l Hospital	Pipestone, Minn.
Ruhl, Sarah	Evangelical Deaconess Hospital	Monroe, Wis.
Sister M. Antonella Rauch	St. Joseph's Hospital	Joliet, Ill.
Sister St. Alban	Huber Mem'l Hospital	Pana, Ill.
Sister Saint Amable	Oak Park Hospital	Oak Park, Ill.
Sister Mary Bernadette	St. Joseph's Hospital	Milwaukee, Wis.
Sister M. Bernardine	St. Francis Hospital	Peoria, Ill.
Sister Charlotte Bockhaus	Evangelical Deaconess Hospital	Lincoln, Ill.
Sister M. Borromea	St. Francis Hospital	Peoria, Ill.
Sister M. Cleta	St. Elizabeth Hospital	Granite City, Ill.
Sister Frieda L. Eckoff	Deaconess Hospital	St. Louis, Mo.
Sister Theresa Kettelhut	Deaconess Hospital	St. Louis, Mo.
Sister M. Patricia	Holy Cross Hospital	Chicago, Ill.
Sister Caroline Pepmeier	St. Lucas Deaconess Hospital	Faribault, Minn.
Sister Rudolpha	St. John's Hospital	Springfield, Ill.
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Schauer, M. Irene	519 United Bank Bldg.	Cleveland, O.
Schobert, Helen	Springfield Hospital	Springfield, Ill.
Schwarting, Louise	Madison General Hospital	Madison, Wis.
Shandera, Hilda	416 S. Kingshighway	St. Louis, Mo.
Shaw, Jean	St. Anne's Hospital	Chicago, Ill.
Shellenberger, Frances V.	Montefiore Hospital	Pittsburgh, Pa.
Shupp, Miriam G.	Strong Memorial Hospital	Rochester, N. Y.
Sieg, Hattie	De Paul Hospital	St. Louis, Mo.
Silverman, Helen Elizabeth	70 Remsen St., Apt. 10-D	Brooklyn, N. Y.
Smith, Gertrude	Barnes Hospital	St. Louis, Mo.
Snodgrass, Nelle	416 S. Kingshighway	St. Louis, Mo.
Spleth, Frieda	Missouri Baptist Hospital	St. Louis, Mo.
Starbuck, Marie J.	Missouri Baptist Hospital	St. Louis, Mo.
Stickler, Adelaide	2408 D Street	Omaha, Nebr.
Taberman, Eva M.	5390 Pershing Street	St. Louis, Mo.
Thompson, Edith L.	4515 Lindell Blvd.	St. Louis, Mo.
Traber, Anna	2124 Highland Ave.	Birmingham, Ala.
Troster, Mrs. Charles E.	Crisler Clinic	Memphis, Tenn.

Tyler, Dorothy	St. Luke's Hospital	Chicago, Ill.
Ulbricht, Edna L.	St. Mary's Hospital	Madison, Wis.
Varnado, Maud E.	Laurel General Hospital	Laurel, Miss.
Vickers, Hattie	Vanderbilt Hospital	Nashville, Tenn.
Warren, Grace	704 Highland	Houston, Tex.
Webster, Lois	City Hospital No. 1	St. Louis, Mo.
Wells, Jewell	Texarkana Hospital	Texarkana, Tex.
Whitford, Mae L.	The Collins Clinic	Peoria, Ill.
Wilbanks, Mary	Baptist Hospital	Birmingham, Ala.
Wilkes, Ruth G.	Barnes Hospital	St. Louis, Mo.
Willenborg, Anna	St. Joseph Hospital	Chicago, Ill.

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*

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*

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*

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*

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